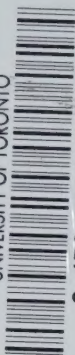


FACULTY OF DENTISTRY LIBRARY
UNIVERSITY OF TORONTO



3 1761 03919900 5



Digitized by the Internet Archive
in 2025 with funding from
University of Toronto

<https://archive.org/details/31761039199005>

A

dent

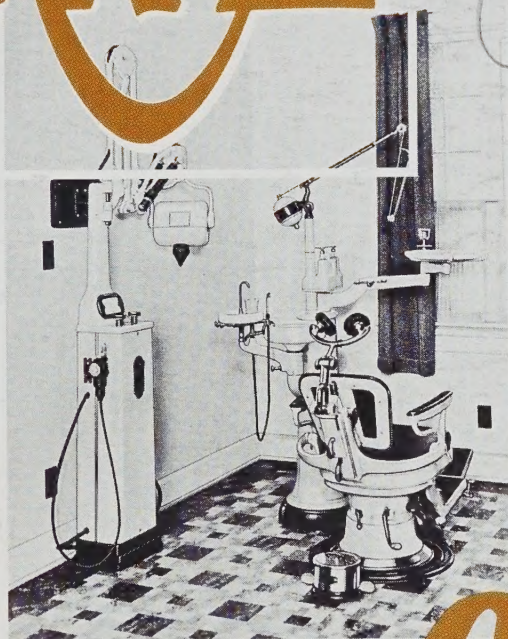
JOURNAL

of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

Vol. 61 No. 1

JANUARY
JANVIER

1995

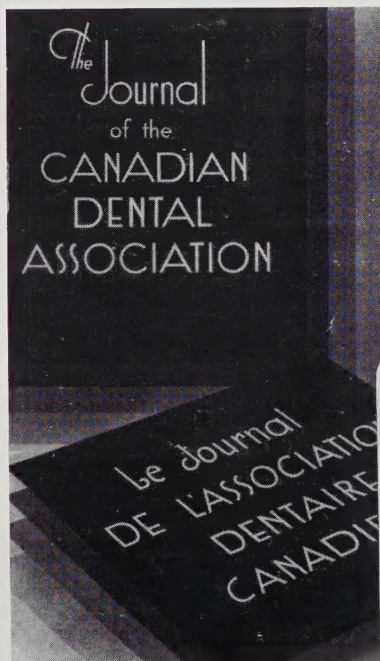


1935

60



1995



DENTAL LIBRARY
UNIVERSITY OF TORONTO
124 EDWARD ST.
TORONTO M5G 1G6
ONTARIO, CANADA

If undeliverable
to Addressee
RETURN TO SENDER
Return Postage
Guaranteed

Si non livrable
au destinataire
RETOURNER A
L'EXPÉDITEUR
Port Payé

Infection Control
Prévention de la contamination

We've been going to the dentist for 100 years, and we never felt better!

What does it take to serve the Canadian dental profession successfully for 100 years? It takes people – skilled, committed, responsible people, in every corner of the country. It

takes the finest in technology and materials – in touch with latest developments, worldwide. And, as the needs of the dental profession evolve, we will always be there – helping to keep you a step ahead.

**Ash
Temple**
LIMITED
100th
Anniversary

Joseph Shaw
Service Technician
Victoria, B.C.

Chantal Dufresne
Customer Service Representative
Montreal, Quebec

Rick Baxter
Sales Representative
Toronto, Ontario

The Ash Temple Companies: Ash Temple Limited, Servident, A-Tech, Microbex Aseptics, ATP Industries

Cabinets by A-Tech

We Recommend

VITA-CELL PRODUCTS

FOR THE TREATMENT OF

ORAL IRRITATIONS,
PYORRHEA, VINCENTS, ETC.

DRY SOCKETS,

PYORRHEA SURGERY,

FISTULAE *and* DRAINS,

Also as a DEODORANT.

*Supplied to the Dental Profession in Three
Forms, and Sold on a Money Back Guarantee.*

Vita-Cell Professional Vita-Cell Home Treatment Vita-Cell Dental Plastic

COMPREHENSIVE BOOKLET IS AVAILABLE
AND WILL BE SENT UPON REQUEST.



Distributed by

THE ASH-TEMPLE CO., LIMITED

243 COLLEGE STREET, TORONTO

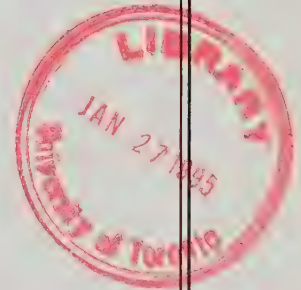
BRANCHES

Montreal
London

Hamilton
Calgary
Edmonton

Regina
North Bay
Vancouver

Ottawa
Winnipeg
Victoria



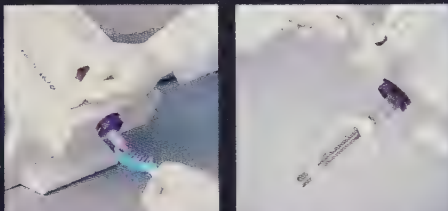
Ash Temple *Journal* Advertisement — Vol. 1, No. 1, 1935

Congratulations to Ash Temple Limited for 100 years of service to the dentists of Canada
and for 60 years of support to the *Journal of the Canadian Dental Association*.

THE WORLD'S MOST ACCURATE IMPRESSIONS... With Just A Touch!

ESPE PENTAMIX® will revolutionize
your impression mixing.

- ◆ Saves time, reduces remakes – providing
you with a void-free mix every time.
- ◆ Easy to use. You even have
extended working time.
- ◆ Ideal for the asepsis oriented practice,
eliminates potential cross contamination.



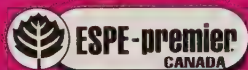
*The tray and syringe are loaded in seconds;
virtually no waste and no clean up.*

Send for a free video

®Pentamix is a registered trademark of ESPE Dental-Medizin GmbH & Co. KG, Germany
®Impregum is a registered trademark of Premier Dental Products Co.

New!
ESPE PENTAMIX®
AUTOMATIC MIXER FOR IMPREGUM®

ESPE Premier (Canada) Inc., 480 Hood Rd., Unit 3, Markham, Ont. L3R 9Z3 • 800-465-8455



JOURNAL

CANADIAN DENTAL ASSOCIATION/
L'ASSOCIATION DENTAIRE CANADIENNE

JANUARY/JANVIER 1995
VOL. 61, NO. 1

Executive Director
A. Jardine Neilson

Editor
Dr. P. Ralph Crawford

Managing Editor
Terence Davis

Assistant Editor, Writer
Antonia Papadakou

*Coordinator, production
& desktop services*
Michelle Walters

Circulation Secretary
Rachel Galipeau

Scientific Editor (English)
Dr. Robert S. Turnbull

Scientific Editor (French)
Dr. Pierre C. Desautels

All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association. The editor reserves the right to edit all copy submitted to the *Journal*. Publication of an advertisement does not necessarily imply that the Canadian Dental Association agrees with or supports the claims therein.

The *Journal of the Canadian Dental Association* is published in both official languages, except scientific articles, which are published in the language in which they are received. Readers may request the *Journal* in the language of their choice.

ISSN 0709 8936
PRINTED IN CANADA



25

AIDS and Discrimination: The Windsor Case
P. Ralph Crawford, BA, DMD

1935 - 1995

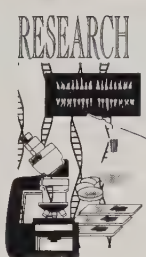


28

The Changing Face of Dentistry
William Scott, DDS
(As told to Terence Davis, BA, Dip.J., CAE)

32

Celebrating 60 Years of Publication: The Journal of the Canadian Dental Association
P. Ralph Crawford, BA, DMD



35

Survey of Knowledge of Infectious Disease and Infection Control Practices of Dental Specialists

Joel B. Epstein, DMD, MSD
Richard G. Mathias, MD, FRCP(C)
David V. Bridger, DDS, MSD

53

Effect on Plaque Removal and Gingivitis Of A Triclosan-Copolymer Pre-Brush Rinse: A Six-Month Clinical Study In Canada

Farid Ayad, DDS
Raymond Berta, BS, MBA

62

L'angio-oedème héréditaire : Une condition médicale à implication dentaire

Edouard Cree, BA, DDS, FIAMS
Benoît Laramée, MD, FRCP(C)
Eric Lessard, DMD

65

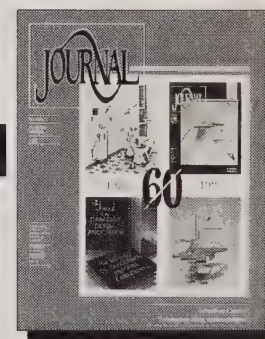
A Pilot Smoking Cessation Program Involving Dental Offices in the Borough of East York, Ontario: An Initial Evaluation

John O'Keefe, M.Dent.Sc., MBA
Anne Lessio, B.Sc.
Beverly Kassirer, RDH, B.Sc.D.

DEPARTMENTS



- 6 Instructions for Contributors
- 8 Letters to the Editor
- 9 CDA Library
- 11 Guest Editorial
- 13 President's Column
- 14 Announcements
- 17 News Update
- 21 Practice Management and Success
- 23 Let's Talk
- 45 CDA Dental Meeting
- 68 CDA Access Ads
- 72 Book Reviews
- 74 Advertisers' Index



Cover: The changing face of dentistry from 1935 to 1995.

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

INSTRUCTIONS FOR CONTRIBUTORS

The *Journal of the Canadian Dental Association* welcomes the submission of previously unpublished articles, critical reviews of material on advances in dentistry, and clinical reports for consideration for publication. Material is accepted for publication on the understanding that it is submitted solely to the *Journal* and that it has not previously been submitted elsewhere.

Scientific Articles:

Are contributions dealing with research, diagnosis and treatment of dental disease, studies in education, clinical and laboratory research, and other detailed investigations pertinent to dentistry and related fields. The text should not exceed 2,500 to 3,000 words.

Clinical Reports:

Are brief (up to 2,000 words) reports, case histories and clinical observations. References should be limited and a minimum number of illustrations used.

Opinions:

That are fully documented (800 words or less) will be reviewed for publication at the discretion of the editor.

Manuscript Requirements :

Submit three (3) copies (original and two (2) duplicates) to the Editor, *Journal of the Canadian Dental Association*, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6. All graphs, photographs, charts and tables must also be submitted in triplicate. Authors are asked to submit their articles on computer disks, if possible, stored in Word-Perfect, Word Star or ASKE. (IBM compatible programs, i.e. DOS-based, are definitely preferred.) Hard copy, in triplicate, must still be provided for articles submitted on disk. For more details, please contact the editorial staff.

A covering letter designating one author as the correspondent, with his or her full address, telephone number and fax number (if available), must accompany the article. All scientific articles are subject to review by selected consultant referees. Acceptance or rejection of an article for publication is based on the referees' reports plus editorial consideration.

The editor reserves the right to edit manuscripts for stylistic consistency, clarity and conciseness. The author named as correspondent will receive a copy of the edited manuscript for checking prior to publica-

tion. If the author does not respond promptly, within the time allotted, his or her acceptance of the final article will be assumed. No exceptions will be made.

Manuscript Format:

All material (title, abstract, text, references, tables and legends) should be typed, double-spaced, on one side of 8 1/2" x 11" pages, with margins of at least one inch on all four sides.

Article Titles:

Should be descriptive but concise and suitable for indexing. Lengthy titles will be subject to editing.

Abstract:

Stating the purpose, results and conclusion of the work must accompany all manuscripts. All abstracts will be translated into French (or English, as the case may be). Abstracts should be approximately one typewritten page (250 words in length), maximum.

Authors Affiliations:

The authors' names, degrees, and university affiliations must be provided. Authors are responsible to disclose to the Editor any financial interests they may have in products mentioned in their article.

References:

Should be selective. They must be keyed to the text and numbered consecutively. *Journal* references must give the author's name, article title, abbreviated journal name, volume number, first and last page numbers of article and year of publication, i.e.,
1. Hechter, F.J., Symmetry and dental arch form of orthodontically treated patients. *JCDA* 44:173-184, 1978.

For books, give the author's name, book title, location and name of publisher, and year of publication, i.e.,
2. Kilpatrick, H.C. *Works simplification in dentistry*, ed. 2, Philadelphia, Saunders, 1964.

Illustrations:

Should be of high (professional) quality for reproduction.

All photographs should be submitted in triplicate as glossy black and white or color prints, or as color slides. When color slides are submitted, authors may submit one color slide and two glossy color prints of each illustration rather than three color slides.

On the back of each print or slide, the figure number and the top edge should be indicated lightly using a grease pencil. Each set of photographs and slides should be placed

in a separate envelope and marked with the authors' name and the title of the article. Photographs and slides may be kept on file in the *Journal* department for up to a year following publication. Authors may request return of their illustration only up until that time. (The editor reserves the right to print color prints or slides in either black and white and/or color, as he sees fit.)

Graphs and line drawings should be of professional quality. The original drawing should be submitted, if possible, or a black and white glossy print of the drawing.

Tables, Charts and Graphs:

Should be well organized to complement the text. They should be keyed by number in order of appearance in the manuscript. Each of these illustrations should be on a separate page with title and footnotes.

Legends:

For all illustrations must be typed (grouped) on a separate page. Photomicrograph legends must specify original magnification and stain.

Most articles are published at no cost to the author, but a fee could be levied if extensive illustrative, formula, tabular or photographic matter is used.

Permissions and Waivers:

Must accompany the manuscript. Waivers are mandatory for the publication of photographs or patients unless faces are masked to prevent identification. Waiver forms are available from the *Journal* of the Canadian Dental Association. Permission of the author and publisher must be obtained for use of previously published material quoted in the text and for use of previously published illustrations.

Reprints:

Twenty-five complimentary reprints are mailed to the corresponding author of Scientific articles after the article is published. Additional reprints of Scientific articles, or reprints of Feature articles are available through the *Journal* for a fee. Additional copies (tear sheets) of articles may be requested 30 days prior to publication. Prices for reprints and copies (tear sheets) are available on request.

Please Note:

Manuscripts that do not conform to the above requirements will be returned to the author. Please read all instructions thoroughly. ■

CDA MISSION STATEMENT



“The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.”

SPECIALTY EDITORS

Endodontics

Dr. W. H. (Bill) Christie

Oral and Maxillofacial Surgery

Dr. David S. Precious

Oral Pathology

Dr. James H. P. Main

Orthodontics

Dr. Kenneth E. Glover

Pediatric Dentistry

Dr. Victor Legault

Periodontics

Dr. James E. (Jim) Stakiw

Prosthodontics

Dr. Michael MacEntee

Public Health

Dr. Donald Lewis

Radiology

Dr. Robert E. Wood

CDA EXECUTIVE COUNCIL

President

Dr. Bryun Sigfstead
Edmonton, Alberta

President-Elect

Dr. James Brookfield
Kirkland Lake, Ontario

Vice-President

Dr. Barry Dolman
Montreal, Quebec

Dr. John Diggins
Vancouver, B.C.

Dr. Toby Gushue
St. John's, Nfld.

Dr. Richard D. Sandilands
Edmonton, Alberta

Dr. David Somer
Hamilton, Ontario

Dr. Tom Breneman
Brandon, Manitoba

Dr. Louis Dubé
Sherbrooke, Quebec

CONSULTING EDITORS

Anesthesiology

Dr. Earle Young

Dental Materials

Dr. Peter T. Williams

Medicine

Dr. George K.B. Sandor

Pharmacology

Ms. Helen Grad

Forensic Dentistry

Dr. Robert Dorion

Infection Control

Dr. Joel Epstein

Practice Management

Dr. Bob Brandon

Cosmetic Dentistry

Dr. Ken Neuman

Nutrition

Mrs. Nina Burgess

Canadian Dental Hygienists Association

Ms. Carol Matheson Worobey

Canadian Dental Assistants Association

Ms. Charlotte Peer-Miller

CDA STAFF

EXECUTIVE DIRECTOR'S OFFICE

Executive Director
A. Jardine Neilson

CORPORATE AFFAIRS

Manager, Corporate Affairs
Sandra Davis
Coordinator,
Board and Executive
Suzanne Burton

PROFESSIONAL SERVICES

Director, Education and Accreditation/Professional Services
Brian Henderson
Associate Director,
Education and Accreditation
Susan Matheson
Coordinator, Education and Accreditation
Gay MacQuarrie

Coordinator, DAT
Danuta Askew

Coordinator, Purchaser Information Program, CDAnet
Patricia Drake

COMMUNICATIONS

Director of Communications
Linda Teteruck
Librarian
Martha Vaughan
Manager, Membership Services
Carol Anne St. Laurent
Manager, Information Services
Lisa Burke

ADMINISTRATION

Director of Administration
Joel R. Neal
Manager, Human Resources
Tefiro Kyeyune
Secretary, Membership
Lydia Allison



Published monthly by the Canadian Dental Association at 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6. Copyright 1982 by the Canadian Dental Association. Authorized as Second Class Mail, Registration Number 5384. Postage paid at Ottawa, Ont.

Subscriptions: All subscriptions payable in advance in Canadian funds. In Canada — \$48 (+ GST); United States — \$53; all other — \$58.

Subscriptions are for 12 issues, not necessarily conforming with the calendar year.

Notice of change of address should be received before the 10th of the month, to become effective the following month.

Member:

American Dental Editors' Association
Canadian Circulations Audit Board

Call CDA for information and assistance toll-free at:

1-800-267-6354

CDA Fax No.: 1-613-523-7736

All matters pertaining to advertising should be directed to:

Keith Health Care Communications
1382 Hurontario Street
Mississauga, Ont.
L5G 3H4

Attn : Ms. Marg Churchill, Sales Representative,
or,
Neil McGillivray, CDA Access Representative

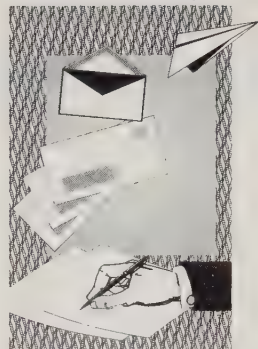
Tel. : (905) 278-6700

Fax : (905) 278-4850



January/
Janvier
1995
Vol. 61
No. 1

LETTERS



Orthodontics and TMD

Congratulations to Drs. Joel Epstein and Jeffrey Bales on an excellent literature review, "The Role of Malocclusion and Orthodontics in Temporomandibular Disorders," in the October 1994 issue of the *Journal*. It was most useful to find all the latest on this most controversial topic in one article.

R. Bruce McFarlane, DMD,
B.Sc.D.
Winnipeg, Manitoba

I am still shocked that the editorial board accepted the article, "The Role of Malocclusion and Orthodontics in Temporomandibular Disorders," by Drs. Epstein and Bales for publication in the October *Journal*. Many of the studies, conclusions and understanding of TMD are weak. Shame on the reviewers for letting this one get by. It would certainly have been acceptable as a literature review, or as part of a more comprehensive and controlled study, but not as a "state-of-the-art" article as it was presented.

Anyone in clinical practice who treats TMD with efficacy knows that there are significant occlusal factors in these multifactorial disorders. The authors' conclusion that "correction of a malocclusion should not be considered as a

treatment of TMD for the majority of patients" is flawed in every respect, and misleading to those of lesser clinical experience. The writers are making bold conclusions built on a foundation of sand.

We, as a profession, are guilty of hiding our heads in the sand and hoping that the spectre of TMD will go away and leave us alone, because we don't thoroughly understand it, and it's not as easy to manage as mesial caries or a malaligned tooth — and that is the driving force behind a number of the studies that the authors quoted. This article does nothing to further our understanding of TMD and its treatment. Instead, it fosters continued ignorance and provides no positive direction in helping patients with these very real problems.

Mark Antosz, DMD, D.Ortho.,
MRCD(C)
Calgary, Alberta

Author's Response

The article, "The Role of Malocclusion and Orthodontics in Temporomandibular Disorders" (*J Can Dent Assoc*, 60:899-904, 1994) reviews the published literature as indexed on Medline, up to the most recent date at the time of preparing the paper — including papers that have been reviewed by other peer-reviewed journals. It was prepared in an effort to provide current and available referenced literature to *Journal* readers.

Certainly dentistry must shift its reliance on anecdotal findings to those based on clinical and basic science research. The state of medical and dental literature should be questioned with scientific curiosity and can only be addressed by conducting controlled clinical studies. A recent discussion of the scientific method was published by Dr. Michael Grace in the *British Dental Journal* (September 10, 1994). It describes a scientific method based on inductive reasoning, which holds that a hypothesis must be based on re-

search that is as accurate as possible and reproducible by other workers in the same field. The essence of science is its ability to be confirmed by others. Literature reviewed for the *Journal* article represented research performed by a number of investigators at different institutions with remarkably consistent findings and did not support orthodontics as a cause of TMD, nor did it support orthodontics as a principal treatment of TMD.

The letter from Dr. Antosz does not supply any documentation or data indicating that orthodontics should be considered either a cause or a treatment for TMD. One's own clinical experience cannot be compared to that of controlled clinical trials, particularly in a chronic condition with fluctuating symptoms like TMD.

The only means by which the dental profession can avoid "hiding our heads in the sand" is to continue conducting controlled clinical studies and to maintain an up-to-date awareness of the literature on which our management must be based. TMD and the management of chronic facial pain is indeed a complex area that requires a much broader prospective than some areas of routine dental practice. This is precisely why this review article was completed and submitted to the *Journal*. We are prepared to conduct continuing discussions based on published articles in refereed journals.

No progress can be made in our understanding of oral disease and dysfunction without basic science studies, application of the findings to clinical situations, and measurement of therapy outcomes. We prepared this article to further the understanding of TMD and its treatment based on current literature, and to provide positive direction to both dental providers and patients.

J. B. Epstein, DMD, MSD
Vancouver, British Columbia

CDA LIBRARY

New Library Acquisitions

Members of the Canadian Dental Association may borrow any of the following texts from the CDA library for one month at a cost of \$5 (plus applicable taxes) by calling: 1-800-267-6354, extension 223.

Baum, Lloyd, Phillips, Ralph N. and Lund, Melvin R. *Textbook of operative dentistry*. 3rd edition. Saunders, 1995.

Besner, E., Michanowicz, A.E. and Michanowicz, J.P. *Practical endodontics: a clinical atlas*. Mosby, 1994. Dental Clinics of North America. [series] *Drugs prescribed to dental patients*. October 1994, v38(4). Terezhalmay, G.T. [guest editor].

Hall, Walter B., Roberts, N.E. and LaBarre, E.E. *Decision making in dental treatment planning*. Mosby, 1994.

Ito, T. and Johnson, J.D. *Color atlas of periodontal surgery*. Mosby-Wolfe, 1994.

LIBRARY PACKAGE FOR JANUARY

During the month of January, the CDA Library is offering a package on Gingival Recession to members for \$5 each (plus applicable taxes).

Koern, Karl R., Tilt, Lloyd V. and Johnson, Kenneth R. *Color atlas of minor oral surgery*. Mosby-Wolfe, 1994.

Korson, D. *Aesthetic design for ceramic restorations*. Quintessence, 1994.

Malamed, Stanley F. *Sedation: a guide to patient management*. 3rd edition. Mosby, 1995.

Meskin, Lawrence H. *Yearbook of dentistry 1994*. Mosby, 1994.

Nanda, Ravindra and Burstone, Charles J. *Retention and stability in orthodontics*. Saunders, 1993.



Nisengard, Russel J. and Newman, Michael G. *Oral microbiology and immunology*. 2nd edition. Saunders, 1994.

Pinkham, J.R. *Pediatric dentistry: infancy through adolescence*. 2nd edition. Saunders, 1994.

Roblee, R.D. *Interdisciplinary dental-facial therapy*. Quintessence, 1994.

Rosensteil, Stephan F., Land, Martin F. and Fujimoto, Junhei. *Contemporary fixed prosthodontics*. Mosby, 1994.

Topazian, Richard G. and Goldberg, Morton H. *Oral and maxillofacial infections*. 3rd edition. Saunders, 1994.

LETTERS... (Continued from page 8)

Mr. Parizeau's Visit to the Dentist

Last month the premier of Quebec, Jacques Parizeau, presented a speech to a business group in Toronto. The part of his speech that bothered me was not his comment on why this great country must accept a sovereign Quebec, but his comparison of Canada's continued relationship with Quebec as "... a never-ending visit to the dentist." The newspaper and television media repeatedly reported on that part of his speech as a synopsis of Mr. Parizeau's whole thesis.

Comments such as this only perpetuate a prejudicial stereotype that our profession has not done enough to "politically correct." The politically correct movement is a social ideology that advocates the elimination of actions that offend minority groups and other special interest groups (i.e. the women's movement does not represent a minorital member

of society, but is a special interest group that promotes equal treatment and opportunity for women in society). The movement is particularly concerned with dismissing any form of stereotyping — especially one that perpetuates a false generalization of the character of the members of the group.

Dental stereotyping, as used by Mr. Parizeau, has been so over-used that it has become cliché. Cliché to the point that the continued use of such a stereotypic metaphor ignores the members of the dental profession it offends. No profession has had to put up with more negative stereotypic clichés than dentistry.

Stereotyping is so ingrained in society's metaphoric language that dentistry is far too often referred to as pain-inducing therapy — to the point that it inhibits many people from seeking treatment before it's

too late. I have often treated people who have been avoiding treatment only to be impressed at how painless the procedure actually was. I could take this as a personal compliment but I know that it is the therapy itself, and not necessarily my skill as a dentist, that is painless. In other words, every day dentists across this country surprise patients who have been avoiding treatment by providing them with a painless dental experience.

With regard to the premier of Quebec's comments, perhaps Mr. Parizeau is admitting that he has been avoiding a dentist for a long time. My suggestion to him would be to make an appointment with a dentist soon — maybe then he would see Quebec's relationship with Canada as a healthy one.

Ben Balevi, B.Eng., DDS
Madoc, Ontario

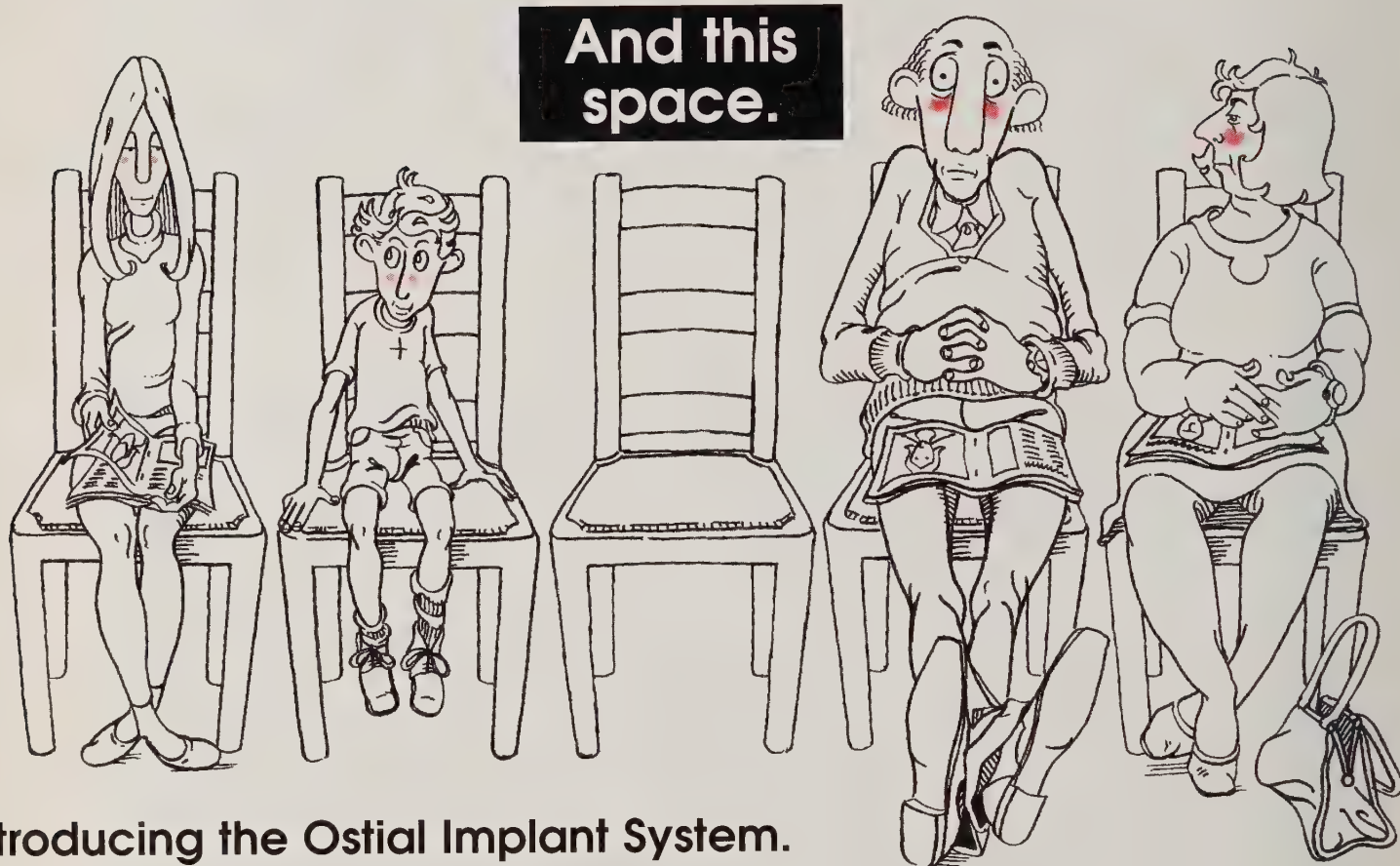
JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

At last, an affordable, uncomplicated implant system to help you fill this space.



And this
space.



Introducing the Ostial Implant System.

Hoechst-Roussel Canada is pleased to introduce Ostial, an affordable, innovative new implant system.

The Ostial Implant has a conical shape for optimum load distribution and a coarse thread design for ease of placement.

Ostial was developed here in Canada and its design is patented*. Training courses will be offered in selected centres and will qualify for Continuing Education credit points**.

For more information, call Michiel Verburg, Product Manager, at 1-800-363-1871 ext.3712 or contact your Hoechst-Roussel representative.

Ostial *Simple.
Affordable.
Innovative.*

Hoechst-Roussel Canada Inc.

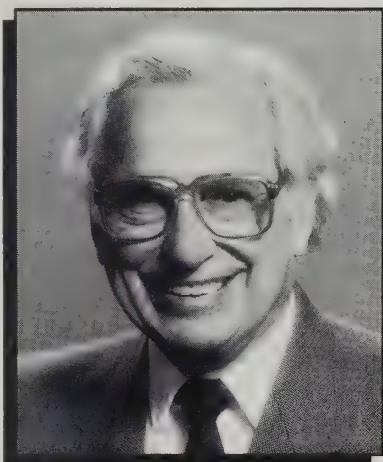
*Canadian patent #1248371 issued.

**For an up-to-date listing, contact HRCI.

The successful outcome of any implant procedure is directly related to proper surgical and prosthetic technique.

GUEST EDITORIAL

THE JOURNAL — STILL THE WINDOW OF THE PROFESSION



Dr. Wesley J. Dunn, DDS
Editor, 1953-1958.

What's the old saying? "The more things change the more they stay the same."

Well, things have changed in dentistry — virtually unrecognizably — since I first had monthly access to the editorial pages of this journal some 42 years ago. If a dentist were to practise the profession today, employing only the knowledge, instruments, equipment and techniques existent in 1953, successful patient-initiated malpractice suits wouldn't be far behind. That's how much things have changed.

Yet, much has remained the same, too. The *Code of Ethics* of the Canadian Dental Association — like those of every other major dental organization on this continent — continues strongly to affirm that every dentist's foremost responsibility is to his or her patients. Everything else is secondary. That fundamental obligation has **not** changed.

Well, what about the *Journal*, now celebrating its 60th year of publication, its diamond anniversary? Has the *Journal*

changed? Most certainly. Its scientific, clinical, economic, and sociological articles reflect the ever-growing knowledge and experiential base on which the profession depends for the care and treatment of patients. Because of the enormous expansion of external influences — largely, but not entirely, governmental — the pages reflect much more of the political (I use this word in its better sense) interests and concerns of Canadian dentistry. This perception may be gleaned, in part, from the fact that when I became part-time editor in 1953, CDA had only four full-time employees. Today, the "news of dentistry" is much more extensive and comprehensive than it has ever been.

In October 1953, I had the privilege of presenting my first "Report of the Editor" to the association's board of governors. The second paragraph — now a little more than four decades old — bears repeating:

"The editor's aim and endeavor will be to provide the best journal of which he is capable in accordance with the means at his disposal. The *Journal*, essentially, will function by informing the members of the association of the scientific, economic, and social developments which affect the health and welfare of the people the profession serves. The *Journal* is the mirror of our profession beyond the confines of our borders, and it is therefore essential that it should at all times maintain a standard comparable to its responsibilities."

And that is what the *Journal* has clearly done in the intervening years — in the almost 500 issues that have been written, edited, printed, and distributed within that lengthy span of time.

The editorial in the February 1956 issue was entitled, "The *Journal* — The Window of the Profession." That has **not** changed. The school, the association, and the journal continues to be the triad on which a profession is dependent for its stature and recognition. Remove one and, like a three-legged stool

with one of its supports removed, the profession cannot be sustained.

So, with this issue, the Canadian dental profession, through CDA, celebrates 60 years of highly-significant journalistic contribution to dentistry, and through dentistry, to the people we serve. Although I feel somewhat dinosaurian at times, I am nevertheless able to derive limitless and pleasurable satisfaction with the progress Canadian dental journalism has achieved over the nearly 40 years in which I have not been directly involved in its development. I extend to all responsible for the highly-competent production of our journal my heartiest congratulations and very best of good wishes on this the 60th anniversary of the founding of this professional publication. And, for the future, may continuing success, limitless satisfaction, and deserving recognition greet you at every corner.

Wesley J. Dunn, DDS
Editor, 1953-1958

Dr. Dunn received his dental degree from the University of Toronto in 1947. After serving as editor of the *Journal*, he was registrar-secretary-treasurer of the Royal College of Dental Surgeons of Ontario from 1956 to 1965. He was a founding director of Canadian Dental Service Plans Inc. (CDSPI) in 1959, and served on its executive until 1965. When the University of Western Ontario (UWO) dental faculty was founded in 1965, Dr. Dunn was appointed dean and served in that capacity until 1982. He was appointed professor emeritus at UWO in 1989. Dr. Dunn is an honorary member of both the Ontario Dental Association and Canadian Dental Association.

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

Membership is your Voice

CDA is the national voice of dentistry.
Take advantage of the many professional and
personal benefits of membership and help shape
the future of Canadian dentistry.



CANADIAN
DENTAL
ASSOCIATION

PRESIDENT'S COLUMN

JOIN THE TEAM



Dr. Bryun Sigfstead,
President

There's something unique about January 1 and all that goes with the day — even if you're not a football fan. It's a turning point, marked by reflection, resolutions, and the hope of better things to come. A time to bid the old year goodbye and welcome in the new.

In so many ways, 1994 was a landmark year for CDA. Between the success we enjoyed early in the year, when we won the first round in our ongoing campaign against the taxation of dental benefits, and the 60th anniversary of the *Journal*, there is much to reflect on. It's good to look back at where you've been, sometimes, and learn from past experiences.

Certainly the *Journal* has had its ups and downs over the years. But I think all of us can agree that dentistry's national publication has improved with age. Like a fine wine, it has matured and developed its own distinctive flavor. Today, as the *Journal* enters its 61st year, I think it's fair to say that it has never looked better. Dentistry tips its hat to the past editors of the *Journal*, and to Dr. Ralph Crawford and his team, for making our magazine the

respected publication that it has become.

As you'll read within the pages of this special 60th anniversary edition of the *Journal*, dentistry has undergone many changes during the last six decades. Techniques have evolved as new materials became available, new equipment has been introduced into dental practice — from lasers to intraoral cameras — even the demographics of dentistry have changed.

When Dr. Harry Garvin became the first editor of the *Journal* in 1935, the vast majority of dentists were men. Today, however, women make up from 30 to 50 per cent of the graduates from Canada's 10 dental faculties. It's a sign of the times. Women are choosing to pursue careers that were once the exclusive domain of men, and they're competing in the workplace as equals.

Unfortunately, while women are beginning to achieve equality in the workplace, many are forced to juggle raising a family with their pursuit of a career, or are faced with a barrage of household chores when they get home from the office.

Given this situation, it's not surprising, when you think about it, that many women have opted for a career in dentistry. Whether they're employed as dentists, hygienists or assistants, women (and men for that matter) can structure their career to take advantage of flexible hours and a three- or four-day work week — and still enjoy an above average lifestyle.

With a few notable exceptions, however, there is one area of dentistry where women have made few inroads. Despite the ever-increasing number of women entering the profession, the boards, committees and councils of Canada's dental societies, licensing bodies and associations continue to be dominated by men.

Whether it's due to a reluctance to get involved, or a feeling that they're not wanted, very few women are playing an active role in organized dentistry. As a result,

decisions relating to dentistry remain largely male-dominated.

This is unfortunate. CDA's mandate is to represent the needs of all its members, regardless of their gender. But to be perfectly honest, it's often difficult for male dentists to really understand the needs and aspirations of their female colleagues. I honestly believe that the profession as a whole would be the winner if more women threw their hat into the political arena, and entered the fray of organized dentistry. We need you.

I realize that many women, because of a myriad of other, more pressing commitments, may find the idea of seeking elected office a little daunting. But, as Drs. Elizabeth MacSween, Kira Obraczova, Micheline Blain, Jillian Page and other pioneers have demonstrated, it can be done. And it does make a difference.

Within the next decade, I'd like to see the changing face of dentistry reflected in the faces of the dentists sitting around our committee tables. I'd like to see members of visible minorities and women take their rightful place within the ranks of organized dentistry, and help to shape its future.

I encourage every member of our profession, whether their skin is black, brown, white, or any shade in-between, whether they're male or female, young or old, to get involved. Make yourselves heard, help us to make reasoned and balanced decisions that reflect your needs and aspirations, as well as those of your colleagues. CDA and dentistry need you.

This January, look back at the past 60 years, reflect on all that dentistry has done, and then make a resolution to become part of its future.

I extend my best wishes for a healthy and happy New Year.

Bryun Sigfstead, DDS
President of the Canadian Dental Association

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

ANNOUNCEMENTS

National Highlights

March 2-4, 1995: B.C. Dental Meeting to be held in Vancouver, B.C.
Contact: Marilynne Webster (604) 736-3645

April 7-8, 1995: Interim Meeting of the CDA Board of Governors 1-800-267-6354

May 11-13, 1995: Newfoundland Dental Association Meeting to be held in St. John's, Nfld. (705) 579-2362

May 11-13, 1995: ODA Annual Spring Meeting to be held in Toronto, Ont. (416) 922-3900 ext. 346

May 25-28, 1995: Alberta Dental Association Annual Meeting to be held in Jasper, Alta.
Contact: Dr. Dave Scott (403) 492-2014

May 26-27, 1995: New Brunswick Dental Society Annual Meeting to be held in Moncton, N.B. (506) 452-8575

May 27-31, 1995: 24e Congrès annuel de l'Ordre des dentistes du Québec — Les Journées dentaires du Québec to be held in Montréal, Qué.
Contact: Nicole Pagé or Ginette Boutin (514) 875-8511 Fax: (514) 875-1561

May 30, 1995: Ordre des Dentistes du Québec Annual Meeting to be held in Montréal, Qué. (514) 875-8511

June 9-10, 1995: Nova Scotia Dental Association Annual Meeting to be held in Digby, N.S.
Contact: Mr. Steve Jennex (902) 420-0088

February/Février 1995

February 4: Xi Psi Phi Alumni Association, Omicron Chapter's Annual Convention to be held in Markham, Ont. For more information call Dr. John Wiles (416) 293-3336.

February 4-11: 34th International Alpine Dental Conference to be held in Courchevel, France. For more information contact: The International Dental Foundation, 53 Sloane St., London, SW1X 9SW, U.K. Tel: 44 (0) 71 235 0788 or Fax: 44 (0) 71 235 0767.

February 6-12: Barbados Dental Association — 7th Annual International Mid-Winter Meeting 1995 Theme: Emerging Technologies in Dentistry — Implants Endodontics. For information contact: Lynne Brandon, 85 Lonsdale Dr., London, Ont. N6G 1T4. Tel.: (519) 657-4306 (evenings).

February 15-19: The Jamaica Dental Association's 31st National Convention will be held at the Jamaica Grande, Ocho Rios. For more information, contact Aurora Travel Services at 1-800-451-5421.

February 16-18: 25th Annual Miami Winter Meeting and Dental Expo in Miami, Fla. For information contact: East Coast District Dental Society, 420 South Dixie Highway, 2-E, Coral Gables, Fla. 33146. Tel: (305) 667-3647 or Fax: (305) 665-7059. From Canada call 1-800-344-5860.

February 23-26: Chicago Dental Society — Midwinter Meeting to be held in Chicago, Ill. For more information contact: CDS, 401 N. Michigan Ave. Suite 300, Chicago, Ill 60611-4205, U.S.A.

February 24-25: American Academy of Fixed Prosthodontics meeting to be held in Chicago, Ill. For more information contact: Dr. William Nequette, 14201 W. Greenfield Ave., New Berlin, Wis. 53151-1697, U.S.A.

February 26 - March 5: Virgin Island Dental Association Conven-

tion. For convention pre-registration and group travel arrangements please contact: Lynne Brandon, 85 Lonsdale Dr., London, Ont. N6G 1T4. Tel.: (519) 657-4306 (evenings).

March/Mars 1995

March 1-4: Australian & New Zealand Association of Oral and Maxillofacial Surgeons, XVIth Biennial Clinical Conference, Towards 2000: Form & Function, being held at the Park Grand Hotel in Sydney, Australia. For information contact: ANZAOMS Conference 1995, Professional Centre of Australia, Private Bag No 1, Darlinghurst N.S.W. 2010. Tel: 61-2-331 6920 or Fax: 61-2-331 7296.

March 2-4: Academy of Osseointegration's 10th Annual Meeting to be held in Chicago, Ill. For more information contact: Academy of Osseointegration, 401 N. Michigan Ave., Chicago, Ill., 60611-4267, U.S.A.

March 13-19: The Annual Dental Meeting of the Finnish Dental Society to be held in Helsinki, Finland. For information contact: Ms. Taru Ohtola, The Finnish Dental Society, Rautatieläisenkatu 6, SF-00520, Helsinki, Finland. Tel: (358) 0-1502-418 or Fax: (358) 0-3-317.

March 16-18: Academy of Sports Dentistry in Anaheim, Calif. For information contact Dr. Art Wood, 1553 Randor Dr., Mississauga, Ont., L5J 3C6. Tel.: (905) 823-2008 or Dr. Frank Stechey, 202-151 York Blvd., Hamilton, Ont., L8R 3M2. Tel.: (905) 577-0770 or Fax (905) 577-0721.

March 18-22: 28th Australian Dental Congress to be held in Hobart, Australia. For information contact: Ms. Beth Pocock or Ms. Sally Philpott, Mures Convention Management, Victoria Dock, Hobart, Tas 7000. Tel: (002) 312 121 or Fax: (002) 344 464.

March 25 - April 1: 35th International Alpine Dental Conference to be held in Courchevel, France. For more information contact: The International Dental Foundation, 53 Sloane Street, London SW1X 9SW, U.K. Tel: 44 (0) 71-235-0788 or Fax: 44 (0) 71-235 0767.

April/Avril 1995

April 1-7: Academy of General Dentistry, British Columbia Chapter's Continuing Education Conference to be held in Whistler, B.C. For information call 1-800-933-1339 or fax (604) 576-5738.

April 7-8: Southern Ontario Surgical Orthodontic Study Group meeting in Windsor, Ont. For details contact Dr. Jeff Berger. Tel: (519) 258-2632 or Fax: (519) 258-2637.

May/Mai 1995

May 3-8: American Academy of Cosmetic Dentistry, 11th Annual Scientific Session to be held in Orlando, Fla. at the Hyatt Regency Grand Cypress Resort. For more information contact: AAACD Executive Office at 1-800-543-9220 or write to: AACD, 270 Corporate Dr., Madison, Wis. 53714, U.S.A.

May 20-24: European Begg Society of Orthodontics, 17th Congress to be held in Chester, U.K. For information contact Geoff Budd, Brookside, 35 Warwick Park, Tunbridge Wells, Kent. TN2 5TA U.K.

June/Juin 1995

June 1-3: BDA Annual Conference "Success in Practice" to be held in Birmingham, England. For more information contact: Linda Wallace, British Dental Association, 64 Wimpole St., London W1M 8AL, England. Tel: (71) 935 0875 or Fax: (71) 487 5232.

June 8-11: 5th International Symposium on Periodontics and Restorative Dentistry to be held in Boston, Mass. For more information

Continuing Education 1995

University of Toronto

February 17-18: Preventive Dentistry Forum — Home Care Products and Office Procedures for the Preventive-Oriented Dental Practice

Presented by the University of Toronto's Faculty of Dentistry Preventive Dentistry Department under the direction of Dr. Hardy Limeback

February 24-25: Success with New Treatment Modalities in Restorative Dentistry

This course will be presented by Drs. Dorothy McComb, James Brown and Laura Tam. Guest speaker: Dr. Izchak Barzilay.

For information contact:
Office of Continuing Dental Education

Faculty of Dentistry
University of Toronto
124 Edward St.
Toronto, Ont.
M5G 1G6
Tel: (416) 979-4902, Ext. 4503
Fax: (416) 979-4936

University of Manitoba

February 17-18: Level II Complexity Basic Molar Root Canal Therapy

Lecture and laboratory participation with Drs. W. Christie, M. Peikoff, W. Acheson & H. Fogel

February 25: Medical History: Assessing the Risks of Treatment
Lecture by Ms. Eunice Edgington

March 4: The Practical Application of the Carbon Dioxide Laser in Restorative Dentistry

Lecture and laboratory demonstration by Dr. Cary Ganz

tion contact: Quintessence Publishing Co. Inc., 551 North Kimberly Dr., Carol Stream, Ill. 60188. Fax: (708) 682-3288.

June 12-15: 1995 Roentgen Centenary Congress and Historical Exhibition to be held in Birmingham, U.K. For more information contact: Miss V. Whitehead, Conference Office, British Institute of

March 16-18: An Oral Surgery Update for the General Practitioner

Lecture & clinical demonstration by Drs. J. Curran & M. Mohen

For information contact:
University of Manitoba
Continuing Dental Education
780 Bannatyne Ave.
Winnipeg, Man.
R3E 0W2

Edmonton & District Dental Society

February 24: G.P. Oral Surgery
Speaker: Dr. Karl Koerner

March 17: Technology/Marketing

Speaker: Mr. Imtiaz Manji

For information contact:
Edmonton & District
Dental Society
P.O. Box 41124
Edmonton, Alta.
T6J 6M7
Tel/Fax: (403) 463-1558

James Sim Institute, Niagara College, Welland, Ontario

February 4: Seminar on Head and Neck Examination for Early Detection of Malignancies
Speaker: Dr. Joseph Natiella

March 3: Seminar on Infection Control in the Dental Office
Speaker: Dr. Lawrence Yanover

April 1: Seminar on Esthetic Veneers and More
Speaker: Dr. John Marotta

For registration information call:
(905) 735-2211 or fax (905) 735-5365

Radiology, 36 Portland Place, London W1N 4AT, U.K.

June 28 - July 1: International Association for Dental Research — 73rd General Session and Exhibition to be held in Singapore. For more information contact: E. Gwynn Breckenridge, Director of Scientific Meetings, 1111 Fourteenth Street N.W., Suite 1000,

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

Washington, D.C. 20005, U.S.A.
Tel: (202) 898-1050 or Fax: (202) 789-1033.

June 29 - July 3: XII International Congress on Oral & Maxillofacial Surgery to be held in Budapest, Hungary. For more information contact: Prof. G. Szabo, Dept. of Oral & Maxillofacial Surgery, Semmelweis University of Medicine, H-Budapest VII, Maria U. 52, Hungary

August/Août 1995

August 23-26: XV World Congress — International Congress of Oral Implantologists to be held in San Francisco, Calif. For more information contact: R. Craig Johnson, 248 Lorraine Ave., Upper Montclair, N.J. 07043, U.S.A. Tel: (201) 783-6300 or Fax: (201) 783-1175.

October/Octobre 1995

October 4-8: 136th Annual Session of the American Dental Association to be held in Las Vegas, Nev. For more information contact: American Dental Association, 211 E. Chicago Ave, Chicago, Ill., 60611, U.S.A. Tel: (312) 440-2658 or Fax: (312) 440-2707.

October 20-21: Southern Ontario Surgical Orthodontic Study Group Meeting to be held in Windsor, Ont. For details contact Dr. Jeff Berger at (519) 258-2632 or fax (519) 258-2637.

October 31 - November 4: Centenary Congress — 28th International Dental Meeting to be held in Buenos Aires, Argentina and sponsored by the Asociación Odontológica Argentina. For more information contact: Dr. Guillermo Pisarenko, president, Junin 959, (1113) Buenos Aires,

Argentina. Tel: (1) 961-6141 or Fax: (1) 961-1110.

November/Novembre 1995

November 15-17: Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00 or Fax: (8) 662 58 42.

December/Décembre 1995

December 25 - January 1, 1996: Alpha Omega International Dental Fraternity — Annual Convention to be held in Tarpon Springs, Florida. For more information contact Stephanie Block, executive director, 206-1314 Bedford Ave. Baltimore, Maryland, 21208 U.S.A., (410) 602-3300 or 1-800-677-8468.



Dentistry Canada Fund Program Guide; DCF partner programs, eligibility requirements and deadlines.



Brånemark Cranio-Maxillofacial Rehabilitation Fund, Nobelpharma Canada Inc.



Multi-disciplinary team experienced in Brånemark System and affiliated with faculties of dentistry and medicine and their associated teaching hospital.
Deadline: ongoing

Dentistry Henry Thornton Award



Any student applying for a DCF Teaching/Research Fellowship.
Deadline: none required

The Eaton Award for Excellence



Any Canadian undergraduate student enrolled in a Canadian faculty of dentistry.
Deadline: March 1

L. E. MacLachlan Fellowships



Prosthodontic and Maxillofacial Prosthodontic divisions at the dental faculties of the University of Toronto, McGill University, Dalhousie University, and the University of Western Ontario.
Deadline: ongoing

Procter and Gamble Research Fellowships



All Canadian faculties of dentistry on behalf of an undergraduate dental student.
Deadline: January 1

Warner-Lambert Fellowships



Canadian dental assisting teachers, dental hygiene teachers or community health dental hygienists, university dental teachers, or Ontario dental hygienists (community/special interest projects).
Deadline: March 1

Wrigley Research Awards Program



Any Canadian dental student -- for research projects relevant to current issues in oral biology.
Deadline: March 1

For more information contact Jim Wegg, Dentistry Canada Fund manager.
Tel.: (613) 731-0493, or fax: (613) 523-7489.

NEWS UPDATE

CAO Elects New President

A Nova Scotia dentist has been elected president of the Canadian Association of Orthodontists (CAO).

Dr. Lee Erickson was elected as CAO's president during its 46th annual scientific meeting, held in Vancouver, B.C., September 29 to October 1, 1994.

After graduating from Dalhousie University's dental program in 1981, Dr. Erickson completed his orthodontic training at the University of Western Ontario (1982-1984). He is currently in private practice in both Dartmouth and Bedford, Nova Scotia, and is also an

assistant professor, division of orthodontics, in Dalhousie's dental faculty.

In addition to Dr. Erickson, the other executive members elected at CAO's Vancouver meeting were: president-elect, Dr. John F. Kalbfleish, Mississauga, Ontario; first vice-president, Dr. Edwin Yen, Vancouver, B.C.; second vice-president, Dr. Ron Markey, Richmond, B.C.; and secretary/treasurer, Dr. Arlene Dagys, Toronto, Ontario.

During the meeting Dr. Donald Woodside of Toronto, Ontario, was presented with the CAO Distinguished Service Award in recognition of his outstanding contributions and exemplary service rendered over a number of years. ■

GLAO Elects New President

Dr. W. Douglas Beaton of London, Ontario, has been elected president of the Great Lakes Association of Orthodontists (GLAO) for the 1994-95 term.

An international constituent of the American Association of Orthodontists, GLAO represents orthodontists in Ontario, Michigan, Ohio, Indiana and Western Pennsylvania.

Dr. Beaton graduated from the University of Toronto's dental school in 1960, and received his orthodontic certification from the University of Manitoba in 1973. He currently maintains a private practice in London, Ontario. ■

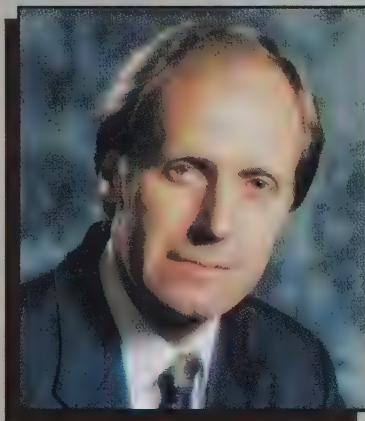
CDA Meets With VAC

CDA met with Veterans Affairs Canada December 1 to restate dentistry's concerns about recent changes to the Treatment Accounts Processing System (TAPS).

The changes were implemented by Veterans Affairs Canada (VAC) October 1, with no prior consultation. They include the introduction of a new provider agreement and guide, as well as annual limits on the amount of dental services a veteran can claim through TAPS without pre-approval.

CDA has consulted closely with its corporate members throughout dentistry's ongoing discussions with VAC. In addition, the association recently sent a President's Letter to all CDA members outlining dentistry's concerns with respect to the TAPS program and the provider agreement.

"Discussion with VAC has confirmed that when a provider submits a claim for payment to Blue Cross through TAPS, Blue Cross (which administers the TAPS program for VAC) assigns an identification number to that provider. VAC then considers the dentist to be a "registered"



Dr. Bryun Sigfstead, CDA president

provider, and the terms of the provider agreement apply," said CDA president Dr. Bryun Sigfstead in the letter.

"In the past, many CDA members have participated in the TAPS program, accepting assignment of benefits out of consideration for this special client group, Canadian veterans. These patients and the dentists who treat them have become accustomed to this delivery system . . . However, the utilization of a dental claims processing form to implicate dentists in a provider agreement and an associated "registry" sets a dangerous

precedent — one that the insurance industry may choose to emulate.

"The new Provider Agreement and Guide apply only to those dentists who choose to participate in TAPS and accept assignment of benefits through Blue Cross. VAC has confirmed that there are absolutely no restrictions on veterans' choice of dentist. If the dentist of choice chooses not to participate in TAPS and prefers to bill VAC clients directly, then these clients can submit their claims for reimbursement directly to VAC. Further, VAC will not require its clients to only select dentists who participate in TAPS. However, if requested by clients, they will provide the names of dentists who accept TAPS."

Along with the President's Letter, CDA members received a background document outlining other important changes to the TAPS program, and their implications for dentistry.

More information will be published in *Communiqué* and the *Journal* as it becomes available. ■

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

Dentistry Mourns the Death of Dr. Ronald E. Jordan



Dr. Ronald E. Jordan, 1929-1994

Dr. Ronald E. Jordan, immediate past-dean of the faculty of dentistry, University of Manitoba, passed away on November 21, 1994.

Born in Regina, Saskatchewan, November 11, 1929, Dr. Jordan earned a bachelor of science degree at the University of Saskatchewan before receiving his doctorate in dental surgery from the University of Alberta in 1954. He practised in Winnipeg, Manitoba, until 1961 when he enrolled in the University of Washington, Seattle, where he obtained his master of science degree in operative dentistry.

Dr. Jordan began his academic dental career in the faculty of dentistry at Dalhousie University. From there, he pursued his interests in dental research at the Cleft Palate Institute, University of Pittsburgh.

When the University of Western Ontario began its dentistry program in 1967, Dr. Jordan accepted a position as head and chairman of restorative dentistry. He was a professor at the London, Ontario, school until 1989, when he became dean of the University of Manitoba's dental faculty.

Dr. Jordan was renowned throughout the world as a researcher and eminent clinical authority in restorative dentistry, with particular expertise in composite filling materials. During his lecturing career, his "tell it as it is"

Canadian Dental Students Win American Contest

Three University of Manitoba fourth-year dental students achieved top honors in the annual Student Community Dentistry Competition sponsored by the American Association of Public Health Dentistry.

Bert Thacker, Antonio Canosa and Cory Sul, working under the supervision of Dr. Olva Odum, researched the dental problems of a Hutterite colony in Manitoba. They subsequently used their findings to present a two-day dental education program to colony members and administrators. ■



Three University of Manitoba fourth-year dental students recently won the American Association of Public Health Dentistry (AAPHD) annual Student Community Dentistry Competition: (l. to r.) Bert Thacker, Antonio Canosa and Cory Sul receive their achievement awards from Dr. Howard Field, competition chairman. The awards were presented at the AAPHD annual meeting held in New Orleans, Louisiana, during the ADA convention in October.

presentations were eagerly attended by thousands of dentists in more than 24 countries. He was also the author of four textbooks and more than 100 scientific publications.

With his passing, Dr. Jordan leaves behind a legacy of dedication to the profession that he loved so dearly. In an interview granted to the *Journal*, shortly after he became dean at the University of Manitoba in 1989, he emphatically stated the principle that guided his dental career: "I don't think I have made it any secret that the development of research, both basic and clinical, is absolutely essential to the future — absolutely essential."

During his academic and research career, Dr. Jordan received many awards and accolades. Some of these include: honorary fellow of the Academy of General Dentistry; fellow of the International College of Dentists; fellow of the American

College of Dentistry; honorary fellow of the Royal College of Dentists of Canada; and fellow of the Academy of Dentistry International. He was also an honorary member of both the Japanese Academy of Full Mouth Reconstruction and the Alpha Omega Dental Fraternity.

One of Dr. Jordan's greatest honors occurred when he was awarded an honorary doctorate of science degree from the University of Alberta in 1992.

A special fund — The R.E. Jordan Memorial Fund — has been established at the University of Manitoba's faculty of dentistry to revere Dr. Jordan's name and endow his dedication to dental education and research. Donations, made payable to the University of Manitoba, may be sent to: Faculty of Dentistry, Dean's Office, Room D113, 780 Bannatyne Avenue, Winnipeg, Man. R3E 0W2. ■

Dr. Robert Salois Elected As ODQ President



Dr. Robert Salois

In a historic, universal suffrage, vote, Dr. Robert Salois was elected president of the Order of Dentists of Quebec (ODQ) last November.

Dr. Salois was the first president in ODQ's history to be elected by the full membership. ODQ's director since 1984, and its vice-president since 1991, he earned his DDS at the University of Montreal. After serving as a dentist in the Canadian Armed Forces from 1970 to '75, he returned to his native Sherbrooke to establish a private practice, which he still maintains. ■

Request For Identification

The Niagara Regional Police Force in St. Catharines, Ontario, requests information on the identification of a homicide victim. The badly burned body was found at the side of the road near Beamsville, Ontario. Described as a male Negroid, the victim was five- to five-feet four-inches tall, weighed 110-125 pounds, had brown eyes, and black wavy hair that was short on the sides and longer on top. There is a noticeable overlap of the left central tooth over the right central.

Anyone who can assist in the identification is asked to contact detective Brent Symonds at (905) 688-4111, extension 4302. ■

CDA and Dentsply Present 24th Student Clinician Program

The 24th CDA/Dentsply Student Clinician Program was held in conjunction with FDI 1994 October 2-8 in Vancouver, B.C.

Sponsored by Dentsply Canada, Ltd. through a special grant to the Dentistry Canada Fund (DCF), this year's program featured nine student table clinics.

Through the program, Canadian students who placed first in their school's individual student clinician program received an all expense-paid trip to Vancouver to present their table clinics.

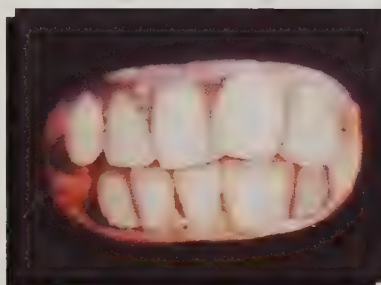
According to the definition established by CDA's council on education, a table clinic is a table-top demonstration of a technique or procedure concerned

with some phase of research, diagnosis or treatment, as related to the profession of dentistry.

The first-place winner, Mr. Hassan Ghaderi Moghadam of McGill University, was invited to attend the 135th annual session of the American Dental Association in New Orleans, Louisiana, October 21-26 as an honored guest of Dentsply International. His clinic was entitled "Computerized teaching in head and neck anatomy." The second-place winner, Mr. Brent M. Hehn of the University of British Columbia, was awarded \$500 for his clinic on "Cleft palate: In search of a solution." ■



Participants and sponsors of the 24th CDA/Dentsply student clinician program: Seated (l. to r.) Katrina Sawler, Dalhousie University; Mr. John I. McDonough, chief executive officer of Dentsply International; and France Chevalier, University of Montreal. Standing (l. to r.) Dr. Ray Wenn, CDA president; Thanh-Liem Truong, Laval University; Hassan Ghaderi Moghadam, McGill University; Brent M. Hehn, University of British Columbia; Johnny Ma, University of Toronto; Charles Zhang, University of Western Ontario; Victoria Jalbert, University of Saskatchewan; Brenda Henry, University of Manitoba; and Mr. George R. Rhodes, Dentsply's vice-president of professional relations.



Photos of an unknown homicide victim found near Beamsville, Ontario.

FOUR THOUSAND

REASONS TO CHOOSE THE CDA RSP



Take a close look at all the reasons to choose the CDA RSP.

Like dependability. The CDA RSP has been a proven performer for more than 35 years.

And our fund managers. We've got some of the best in the business - including our stock funds manager, Altamira Management.

Look at our low management fees. And ten

outstanding funds providing investment flexibility - including four new foreign funds.

Need more reasons?

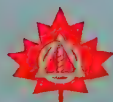
Consider the nearly 4,000 people who have already chosen the CDA RSP. And the approximately \$200 million they have invested in the plan.

So contact CDSPI for more information about the CDA RSP. After all, you've got a few thousand good reasons to call.

TOLL FREE 1-800-561-9401 EXT. 253, 254 OR 255

METRO TORONTO (416) 296-9401 EXT. 253, 254 OR 255

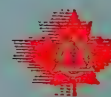
FINANCIAL PROGRAMS DESIGNED BY DENTISTS FOR DENTISTS



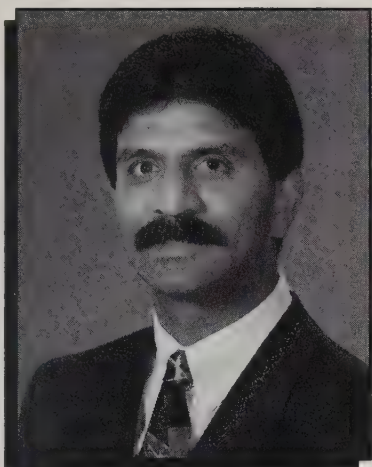
CDSPI

**CANADIAN DENTAL
SERVICE PLANS INC.**

100 CONSILIUM PLACE, SUITE 710
SCARBOROUGH, ONTARIO, M1H 3G8



**CANADIAN
DENTAL
ASSOCIATION
L'ASSOCIATION
DENTAIRE
CANADIENNE**



Your Goals Into Action

Imtiaz Manji, B.Sc.

Principal of ExperDent

It's hard to believe that 1994 has come and gone so quickly, and that we have long since finished blowing our party horns to welcome in the New Year. If you're like most people, you probably have a list (whether in your mind or on paper) of the resolutions you hope to make in your life — to embark on a regular fitness program, to eat healthy foods, or to read those unread novels collecting dust on the living room bookshelf. Such commitments, though well-intended, are among the many resolutions that aren't likely to make it past the first quarter, and it's not too difficult to figure out why.

Most New Year's resolutions are declared fleetingly (sometimes in the eleventh hour on December 31, when the champagne is flowing) without a great deal of thought or planning. Let's take the classic example of a fitness program. You often hear people committing to improving their physical condition, but you seldom hear about how they intend to do it. That's because they frequently haven't considered the means by which to achieve the end; these individuals simply see themselves with a toned waistline. And in this visualizing, they may spend more time thinking about the new wardrobe they'll need instead of pondering a strategy on how they'll get into shape in the first place.

Another interesting thing about resolutions is that they tend to be

quite personal in nature, related to self-improvement and self-actualization. Though wonderful, this compartmentalization is often curious. I've frequently heard people declare several personal resolutions, while proposed changes to their professional lives remain conspicuously absent. This is particularly evident with those who are established or "coasting" in their professions.

I'd like to say that dentists are the exception to this rule, but this is, unfortunately, not the case. Although I don't have any statistical data to back it up, I wouldn't be surprised to learn that many dentists are among those who "coast," reacting to the day-to-day clinical and business concerns, while allowing the "bigger picture" to take care of itself. The problem, of course, is that without any proactive or preventive measures, this (taking care of itself) never happens.

Goals Versus Resolutions

Let's start with semantics. Try to avoid discussing changes in the context of resolutions — these intentions have come to be associated with the start of the year and are almost always doomed to fail. Instead, talk about goals that can be defined, refined and pursued at any time. Goal-setting necessitates a sense of commitment, foresight and optimism that is helpful in facilitating change.

According to the *Concise Oxford Dictionary*, a goal is "the object of a person's ambition or effort; a destination; an aim." But why are they important? Psychologically, goal-setting has an incredible benefit. By going through the motions of goal-setting — writing our goals down, reading them daily, and monitoring our behavior to determine if it matches our goals — we create awareness in ourselves, an understanding of what we need to do and a visibility of our ultimate aims.

Dental Goals

If you analyze your practice, you'll see that there are many areas that you can put into the framework of goal-setting. Your goal may be to increase case acceptance, or to fill the appointment schedule, reduce the accounts receivable, improve team communication, develop a practice budget, or keep a lid on inventory costs — only you know the areas that warrant the most attention. Because there isn't space within this column to address each potential practice goal, a critical area for goal-setting — referrals — will form the balance of our discussion.

However, irrespective of the area you choose, the approach to achieving goals remains constant. You need to *evaluate* the present situation, *involve your team* in the process, develop an *action plan*, and implement a *monitoring system* to ensure you stay on track.



Increasing Referrals

Dental teams know that new patient flow is critical to keeping their practices buoyant. However, this awareness often doesn't move beyond being a nebulous idea. With goal-setting and planning, the team can influence new patient flow, making it a concrete and achievable objective.

The first thing to do is to follow the so-called golden rule of goal-setting: look at your history and understand your present performance in a particular area. By evaluating your practice numbers, you can determine the number of new patients you're getting each month. Let's assume this number is 16. What you want to do is break down this number to determine the number of "natural" referrals (new patients whose immediate family members are your patients/staff) and the number of internal referrals (new patients who are the friends, colleagues, or extended family of your patients/staff). Perhaps the ratio of natural versus internal referrals is 50:50.

When you set goals aimed at increasing referrals, be sure to involve your whole dental team — they will serve as your reality check in case your stated goal is unreasonable. Let's say that you collectively decide that you want to aim for 16 internal referrals and eight natural referrals, boosting your total referrals to 24 per month.

Now you need a plan of action. What are you going to do to ensure that these new patients come to your practice? One idea is to discuss this at the morning huddle. All patients scheduled for that day should be discussed: who they are, where they come from, where they work, and whether they are potentially good referral sources — discussing each patient will create an awareness in your team that will facilitate movement towards your goal. Then you should determine which staff members are best suited to communicate with which patients about the practice's welcoming of new patients.

Keep in mind that the team doesn't have to resort to sophisticated begging — appearing desperate and vulnerable can be very damaging to patients' trust and

confidence in the practice. There are many tactful ways to convey to patients that you welcome their referrals. For instance, instead of asking patients, "Have you referred any patients?" you might say, "We've been doing a survey at our practice and we understand that many patients think that we don't accept new patients when, in fact, we do. Was that your opinion?"

Another opportunity to ask for a referral is when a patient who has just undergone major treatment verbalizes his or her pleasure to one of the team members. It is quite appropriate for the team member to indicate that the dentist would welcome the opportunity to provide quality care to any friends, relatives or co-workers the patient refers. (This same message can appear in writing in newsletters, brochures and on practice signage.)

As an adjunct to your action plan, you'd be wise to create patient charts full of pertinent information, including their optimum appointment times, record in terms of punctuality, personal interests, degree of health-consciousness, etc. If you can paint a patient picture in each chart — providing you with an understanding of each patient's individuality — you'll be able to customize dental experiences accordingly and develop a strong rapport with each patient. And that relationship is instrumental in facilitating new patient flow.

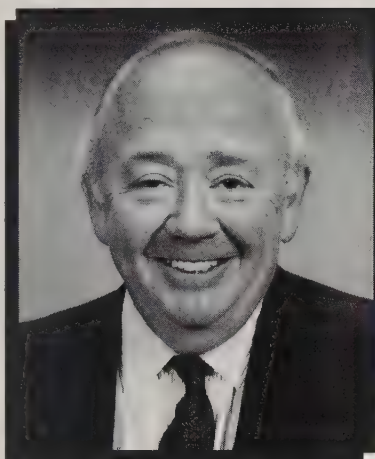
The final stage in achieving your goal is to implement a monitoring system. Dentists who already set regular professional goals often find that this last step on the ladder is where they lose their footing. They evaluate their situations, involve their teams, and come up with constructive action plans — but then fail to monitor their progress and, consequently, end up wondering why their goals remain elusive.

Following the Formula

In the preceeding example, we talked about applying a goal-setting approach in order to increase referrals in the practice. But, as I mentioned, this type of planning can be adapted to virtually any area of your practice. For instance:

- if you identify **collections** as the major thorn in your practice's side, you'll need to tackle that. The general idea here, of course, is two-fold: to get delinquent accounts under control, and to prevent new ones from sprouting. You achieve these goals by understanding your own financial policies, communicating them to patients and ensuring that your staff implement them.
- Or perhaps you're finding that **case acceptance** isn't what it should be. You would begin by gaining an understanding of how much of the treatment you've diagnosed isn't being accepted and why.
- Maybe you've discovered that what your practice really lacks is **effective marketing**. The list of endless marketing opportunities emphasizes staff responsibility and accountability. It includes a no-cavity club for kids, and increased emphasis on relationship marketing. Get your staff involved by asking them to listen to patients and find out what they're really about. When patients mention that they're taking a trip next month or that they're practising for an upcoming music recital, your staff can follow-up by sending a card, be it to wish them bon voyage or good luck. Just think of the impact it could make if each staff member sent one card each day. Other special events to keep informed about are patients' weddings and graduations. To ensure that all of this gets done, appoint a marketing director who can take responsibility for ensuring the implementation of the marketing activities.

Regardless of which aspect of your practice you focus on, you can evaluate each goal area, involve your team, come up with an action plan, and monitor your progress. Just keep in mind that simultaneously pursuing too many goals can blur your vision. Focus on one goal per month or quarter, depending on the complexity of the area, and if you find yourself getting impatient for things to change, remember that, like Rome, a solid practice can't be built in a day. ■



The New CDA Global Funds: CDSPI Continues to Respond to Dentists' Needs

Dr. Rod Moran
President of CDSPI

From the very beginning, Canadian Dental Service Plans Inc. (CDSPI), has made "responding to your needs" one of its most important pledges to Canadian dentists. Our activities over the past few years serve as a perfect example of this commitment.

In the Canadian Dentists' Insurance Program (CDIP), CDSPI introduced TripleGuard™ to provide comprehensive office insurance in an economical package. We launched data processing insurance, then included it — at no additional cost to dentists — in TripleGuard™. We also launched legal expense insurance (available in many provinces), and hospital cash insurance.

Our retirement services program also experienced significant growth. CDSPI introduced the CDA RIF (Canadian Dental Association Retirement Income Fund). We also added the Aggressive Equity Fund to the CDA RSP, and enlisted some new fund managers, including Altamira.

Now, the introduction of new plans continues with four new RRSP and RRIF funds.

Introducing Four CDA Global Funds

Effective January 1, 1995, the CDA RSP and CDA RIF will include an International Equity

Fund, European Fund, Pacific Basin Fund and Emerging Markets Fund. By way of introduction, consider this general information about these new funds:

- The CDA European Fund invests in the more established European economies, including Belgium, France, Germany, Italy, the Netherlands, Spain, Sweden, Switzerland and the United Kingdom.
- The CDA Pacific Basin Fund invests in the more developed markets of the Pacific Basin region, mainly Japan, Hong Kong, Australia and Singapore.
- The CDA Emerging Markets Fund invests in a diverse portfolio of equity securities in the world's smaller, but faster growing areas, including Argentina, Brazil, Indonesia, Korea, Malaysia, Mexico, the Philippines, Portugal, Taiwan and Thailand.
- The CDA International Equity Fund is basically a combination of the other three funds — mainly the European and Pacific Basin Funds, and to a lesser extent, the Emerging Markets Fund.

Managing the funds is Knight, Bain, Seath & Holbrook, the same industry-leading firm that manages

the CDA Balanced Fund. The new funds have exceptionally low management fees of less than 1.5 per cent.

In selecting these additions to the CDA RSP and CDA RIF, we aimed for conservatively managed funds with strong potential for long-term growth. The International Equity Fund's risk level and potential rate of return is slightly higher than the CDA Common Stock Fund. The risk levels of the European Fund and Pacific Basin Fund are about equal, but higher than the International Equity Fund because they're less diversified. The Emerging Markets Fund's risk level is comparable to the CDA RSP Aggressive Equity Fund.

Up to 20 per cent of your RRSP or RRIF holdings in any one plan can be in foreign funds. This is based on the amount of your original contributions. You'll find that most — if not all — financial experts advise investing in foreign funds. International investment opportunities give you the chance to increase the overall rate of return of your portfolio, and adding funds further diversifies your portfolio, which decreases risk.

For more information on these funds, I refer you to the December issue of the *CDA RSP Investor*. If you're not a CDA RSP or CDA RIF participant and you would like to



find out more about these funds and the plans, simply call CDSPI at 1-800-561-9401, or (416) 296-9401 in Metro Toronto, and reach a Retirement Services Administrator at extension 253, 254 or 255.

Responding To Your Evolving Needs

The introduction of these new funds resulted from a survey conducted among CDA RSP participants, in which an overwhelming majority requested international funds. Survey results also prompted the introduction of the CDA RIF (requested by 80 per cent of respondents), and the new CDIP hospital cash insurance plan.

The broad use of surveys was one of our original objectives when I began as CDSPI president. It's the ideal way to determine which programs and services you want.

In fact, we have just completed the "survey of surveys" — an extensive study conducted by Angus Reid that covers virtually every aspect of your insurance and investment needs, and how well CDSPI meets them. No doubt, results from this survey will lead to further improvements to programs and services.

Soon, I will be retiring from CDSPI. Looking at our programs, I sincerely believe that the Canadian Dentists' Insurance Program and the CDA RSP and CDA RIF are among the leading financial programs offered by any professional group in Canada.

Most importantly — as the last couple of years have demonstrated — your programs are *always* evolving. It's all part of CDSPI's ongoing effort to continue providing dentists with the best financial programs available to the profession in Canada. ■



FACULTY OF DENTISTRY
MCGILL UNIVERSITY

FULL-TIME RESEARCH/TEACHING POSITIONS

Applications are invited for full-time research/teaching positions in the Faculty of Dentistry, McGill University. Two categories of individuals will be assessed:

1) PhD trained individuals who can bring expertise in a basic science applicable to health science; 2) clinically trained individuals, ideally with a PhD, who are eligible for dental licensure in Quebec. These individuals will interact with clinical dental staff, research hospital staff, and the university research community to generate research ideas, collaborate in oral-facial problems (e.g. material science, molecular biology, neurosciences) and teach at the undergraduate and graduate levels. Candidates are expected to obtain external research funding.

The University is committed to equity in employment. Furthermore, in accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada.

Applications will be considered until March 30, 1995, or until the positions have been filled, and should be sent to the following address, accompanied by a detailed curriculum vitae and the names and addresses of two referees:

Executive Planning Committee
Faculty of Dentistry
McGill University
3640 University Street, Suite M/28
Montreal, QC
H3A 2B2

CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	* Unit values at		12 Month Return %
	October 31, 1994	September 30, 1994	
Bond & Mortgage Fund	11.17889	11.18766	-1.2%
Common Stock Fund	23.59970	24.71030	1.3%
Money Market Fund	68.55157	68.30752	4.6%
Balanced Fund	42.52571	42.61423	-0.1%
Aggressive Fund	8.76055	9.07547	N/A

G.I.C. Fund

Term	October 31, 1994	September 30, 1994
1 yr	6.20%	6.20%
2 yr	7.20%	7.15%
3 yr	7.45%	7.40%
4 yr	7.65%	7.65%
5 yr	7.95%	7.90%

(*Rates subject to change without notice.)

*Total Net Assets (market value) of the Plan as of:

(includes RRIF assets)	October 31, 1994	September 30, 1994
	\$188,370,811.00	\$190,391,835.00

For further information:



CDSPI

Write:

CDSPI
Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:

416-296-9401 Metro Toronto
1-800-561-9401 Service in English
Extensions:
252, 253, 254
1-800-665-9401 Service in French
1-416-296-8920 Fax.

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

INFECTION CONTROL



AIDS and Discrimination: The Windsor Case

P.R. Crawford, BA, DMD

ADA News made just about every dentist in North America sit up and take notice recently, when it ran the words "Dentist Must Pay \$100,000 to Settle HIV Case" in big, bold letters across the top of the front page.

The accompanying article told the story of how a Houston, Texas, dental office settled a federal lawsuit charging it with refusal to treat an HIV-positive patient, in violation of the Americans With Disabilities Act.

In fact, the most frightening aspect of the case was probably reflected in the dentist's final comment: "The dental centre did not discriminate. We settled this for economic reasons. This was a business decision. With legal fees running between \$30,000 and \$40,000 to date, we sat down and ran some numbers and figured out that if we could settle, it would be cheaper than it would be to fight this thing. You can't go head to head — financially — with the Department of Justice."

Dr. Paul DeMarco

Not every dentist is willing to take the settlement route, however. Dr. Paul DeMarco, a Windsor, Ontario, practitioner, is a case in point. Refusing to be intimidated by charges of discrimination, he chose to defend his innocence and go head to head with the justice system. That decision ultimately led to a tortuous three-

year journey through the Royal College of Dental Surgeons (RCDS) of Ontario's discipline committee, the Ontario Health Disciplines Board, and the Ontario Human Rights Commission. His story is one of hardship, duress and courage — but right prevailed in the end.

Mr. Jerome Keeps His Appointment

In March 1990, a 30-year-old Windsor man called Dr. DeMarco's office and arranged an appointment for a check-up and cleaning. Mr. Jerome (no first name was ever provided) volunteered no information about his medical condition over the phone, nor was he asked about it.

Mr. Jerome arrived at Dr. DeMarco's office on March 29. As a new patient, he was asked by the receptionist to fill out a standard dental/medical history form. When he listed AZT as one of the medications he was taking, the receptionist, who was unfamiliar with the drug, took the form to Dr. DeMarco.

Once he'd confirmed that Mr. Jerome had AIDS, Dr. DeMarco offered to examine him immediately, but said that any required treatment would have to be re-appointed to the end of the day so that the appropriate treatment protocol could be established. This was unacceptable to Mr. Jerome and he left the dental office.

Discrimination

Following Mr. Jerome's departure, events moved quickly. Mr. Jerome called the press and the local television station claiming that he had been discriminated against. He lodged a complaint with the RCDS, contacted the Ontario Human Rights Commission, and called Dr. DeMarco to say that he intended to sue the dentist for discrimination.

Treatment of AIDS patients was not uncommon in Dr. DeMarco's practice. One of six dentists on the AIDS Committee of Windsor's referral list, he had previously treated numerous HIV-infected patients in the local hospital as well as in his private office, and he was prepared to treat Mr. Jerome.

The issue in question was not that Dr. DeMarco had refused to accept Mr. Jerome as a patient, but that he had chosen to reschedule this particular patient to the end of the day. Dr. DeMarco sought this delay so that he would have time to review the treatment protocol for AIDS-infected patients.

The Human Rights Commission subsequently charged Dr. DeMarco with discrimination. It reasoned that because of Mr. Jerome's medical condition — AIDS — Dr. DeMarco had treated him differently than any other patient attending his practice for a scheduled check-up and cleaning.

At this point, Mr. Jerome offered Dr. DeMarco an avenue of settle-

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

ment. The case could be resolved if Dr. DeMarco agreed to pay Mr. Jerome \$1,500 in general damages for his mental anguish and offered him a letter of apology. Dr. DeMarco refused and sought legal counsel from Windsor lawyers, Harvey Strosberg and Edward Ducharme.

An inquiry, lasting eight days, took place more than a year after the original incident. The complaint alleged discrimination in services on the basis of handicap, contrary to sections 1 and 8 of the Ontario Human Rights Code, 1981, which states: "Every person has a right to equal treatment with respect to services, goods and facilities, without discrimination because of . . . handicap."

AIDS Is a Handicap

This was the first human rights case in Ontario to consider whether AIDS is a handicap under the law. The Ontario Code partially defines handicap as: "any degree of physical disability, infirmity, malformation or disfigurement that is caused by bodily injury, birth defect or illness."

Dr. John Hardie, who was then head of dentistry at the Vancouver General Hospital, appeared as an expert for the commission. By defining AIDS as "opportunistic infections and neoplasms that are the result of destruction of the human immune cellular system by infection from the human immune deficiency virus," Dr. Hardie strengthened the commission's case. In effect, his testimony supported the argument that AIDS, as a very serious debilitating and life-threatening disease, is a handicap.

Dr. DeMarco's lawyers did not contest the issue of whether or not Mr. Jerome was a handicapped patient. Nor did they claim that the rescheduling incident was an issue of infection control. Dr. DeMarco, who regularly treated AIDS patients, was one of the more experienced dentists in the Windsor area, and was quite aware of the recommended infection control procedures.

In Dr. DeMarco's defence, Mr. Strosberg denied that discrimination, as defined under the code, had taken place. He emphasized that the



Windsor lawyers (l to r), Mr. Harvey Strosberg and Mr. Edward Ducharme, successfully defended Dr. Paul DeMarco in an AIDS discrimination case.

postponement of Mr. Jerome's treatment was based on treatment protocol, not on discrimination. Dr. DeMarco was willing to do an examination at the first appointment, but he wanted sufficient time to contact Mr. Jerome's physician before proceeding with any required treatment.

The Balance of Probabilities

The inquiry pivoted on a balance of probabilities. The onus was on Dr. DeMarco to present evidence demonstrating that the differential treatment accorded to Mr. Jerome was justified.

Dr. Hardie, the commission's expert witness, supported the defence's arguments on the consulting process. In his testimony, he stated, "patients who have symptoms of decreasing immunologic capacity do require additional care. It is essential to consult with the attending physician for an assessment of the immunologic tolerance of the patient, information on prescribed medications, an idea of the patient's prognosis and current physical and mental status. These details are pertinent to the development of a safe and effective dental treatment plan."

Questions also arose regarding the postponement of Mr. Jerome's dental cleaning. If the dental hygienist was available at Mr. Jerome's first appointment, was it discriminatory of Dr. DeMarco to attempt to reschedule the cleaning to the end of the day?

Dr. Patrick Nagle, a Windsor periodontist, testified that all AIDS patients show an increased sus-

ceptibility to periodontal disease, and that it wouldn't be unusual for a dentist to perform the cleaning procedure if local anesthetic was required for deeper curettage. The commission did not contest this evidence. Instead, as stated in its final decision, the commission concluded: "that a proper dental procedure would require Dr. DeMarco to do the cleaning rather than the hygienist, and that the cleaning would have to be a more thorough one than for most patients . . . the health requirements for treating Mr. Jerome could not be met in the circumstances of March 29, 1989 without undue hardship to Dr. DeMarco."

Complaint Dismissed

On March 12, 1992, dental and legal history unfolded in Ontario. Almost 24 months after Mr. Jerome's dental appointment, professor H.A. Bassford, the chairman of the board of inquiry, pronounced his decision: "I have found that the commission did not demonstrate a *prima facie* case of discrimination . . . namely that Dr. DeMarco refused to treat Mr. Jerome directly or by acting in a manner calculated to discourage Mr. Jerome from becoming a patient . . . I accordingly find that Dr. DeMarco did not discriminate in service with respect to Mr. Jerome on the basis of handicap. The complaint is dismissed."

With this ruling, the first charge of discrimination in which AIDS was considered as a handicap under the Ontario Human Rights Code was lost, and Dr. DeMarco was fully exonerated.

But the process of clearing his name exacted a hefty toll. For almost two years, Dr. DeMarco underwent mental and fiscal hardships that no dentist should face. He faced constant pressure from the media, with members of the press ringing his doorbell and phoning him — at one time, he even had television crews on his front lawn.

He has also had to defend himself — successfully — at both the RCDS discipline committee and the Ontario health disciplines board. The monetary loss within his dental office mounted every time he had to leave work to attend an inquiry or committee meeting. Was compensation possible?

Bad Faith

On March 12, 1992, when professor Bassford dismissed the complaint against Dr. DeMarco, he gave leave to Dr. DeMarco's lawyers to make submissions on the issue of costs. They argued that Mr. Jerome's complaint was vexatious and had been made in bad faith, causing undue hardship to Dr. DeMarco. But it took an additional 14 months to reach a conclusion regarding compensation.

An understanding of the final conclusion requires some familiarity with the legal terms involved in Mr. Strosberg's argument. For example, *Black's Law Dictionary* defines vexatious as "being without reasonable or probable cause or excuse." Bad faith is not simply bad judgement or negligence, but also implies "conscious wrong-do-

ing because of a dishonest purpose or moral obliquity." Bad faith differs from negligence in that it encompasses a state of mind that is affirmatively operating with furtive design or ill will.

Based on these definitions, the chairman, in his decision on costs, concluded that Mr. Jerome had reasonable or probable cause to believe that his rights had been infringed on. As such, his complaint was not vexatious. However, there was sufficient evidence to suggest that Mr. Jerome had demonstrated bad faith. As professor Bassford outlined, Mr. Jerome's fundamental complaint was false. The chairman also determined that Mr. Jerome had a political interest — he was prepared to make a public political statement — and that he had enjoyed the publicity generated by the case.

Professor Bassford was similarly critical of the Ontario Human Rights Commission's handling of the case: "Although the commission has not been shown to have acted in bad faith, in some particulars the commission did not discharge its mandate fully, which compounded the results of Mr. Jerome's bad faith." In summation, professor Bassford found: "that Mr. Jerome acted in bad faith, which in the particulars of this case were exacerbated by the commission's investigative failure, and that in consequence Dr. DeMarco suffered undue hardship."

The Award

Thirty-eight months after what was supposed to have been a rou-

tine examination and cleaning appointment, Dr. DeMarco gained some satisfaction when he heard professor Bassford say: "The respondent (Dr. DeMarco) did not impede the investigation, but rather responded to all requests for information . . . Consistent with this, I order the respondent be awarded costs on a solicitor-client basis. These costs will include all but only those costs directly associated with the process of this board of inquiry. The total will not, however, exceed \$80,000, which is the amount requested by counsel for the respondent."

A Happy Conclusion — Yes and No

Certainly Dr. DeMarco was happy that his innocence was affirmed, and that, unlike the Texas case, he didn't have to pay \$100,000 in compensation for an act he didn't commit. But the toll on his personal life is inestimable — both mentally and financially.

No doubt the Ontario Human Rights Commission was unhappy with the outcome. Not only were they unable to prove discrimination against an AIDS patient, they were chastised by the inquiry chairman for their handling of the case. Nor could they be very happy when Dr. DeMarco was awarded \$80,000 in costs.

But the saddest outcome of all concerned Mr. Jerome, the big loser in this case. Before the inquiry was concluded, he died from complications brought about by his AIDS condition. ■

Discrimination

The Canadian Charter of Rights and Freedoms: (Article 15, Section 1) Every individual is equal before and under the law and has the right to the equal protection and equal benefit of the law without discrimination and, in particular, without discrimination based on race, national or ethnic origin, color, religion, sex, or mental or physical disability.

CDA Code of Ethics: (Article 5) Provision of Care: A dentist shall remember the duty of service to the patient for care to all members of society. A dentist shall not exclude, as patients, members of society on the basis of discrimination which may be contrary to applicable human rights legislation. Other than in an emergency situation, a dentist has the right to refuse to accept an individual as a patient on the basis of personal conflict or time constraint.

1935 - 1995



The Changing Face of Dentistry

William Scott, DDS

(As told to Terence Davis, BA, Dip. J., CAE)

When Dr. Harry Garvin founded the *Journal of the Canadian Dental Association* in 1935, most patients equated a trip to the dentist with pain. Small wonder. Between the slow-speed, foot-driven handpiece and the lack of truly effective anesthetics, getting a filling done was anything but a pleasant experience.

Even so, Dr. Garvin probably had little or no conception of how much his chosen profession would change in the ensuing 60 years. Today, says his nephew, Dr. William Scott, patients are just as likely to doze off in the dental chair as they are to grip its arms in a state of panic.

"I recall with a shudder having fillings done as a child. The only anesthetic available was novocaine, which sometimes worked and sometimes didn't . . . Combine the coarse cross-cut burs used in those days with the slow, belt-driven handpiece, the smell of burned tooth, the dust flying around in the mouth — some of which was inhaled, because no rubber dam was used, and you have the scenario of one scared little boy having a cavity filled . . .," said Dr. Scott.

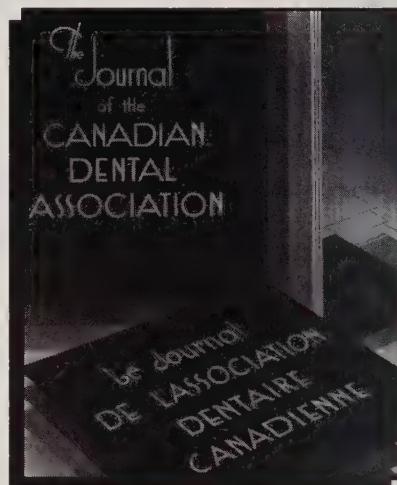
"But with the good local anesthetics we have today, the rubber dam in place, high-speed burs and handpieces and a water spray, the patient's have a hard time staying awake while we do our operative dentistry."

Dr. Scott entered practice in 1938, three years after his uncle brought the *Journal* into being. He has pioneered many of the changes that have occurred in dentistry during the past six decades, from the advent of composites to the introduction of the high-speed handpiece and the carbide bur. He was a member of CDA's Health Insurance Studies Committee for nine years in the 1940s and '50s, when fluoride's remineralization and caries prevention properties were first recognized, and he lived through the controversy that surrounded the fluoridation of Canadian drinking water.

The biggest change that has occurred in dentistry, however, may be in the ability and desire of dentists to preserve the natural dentition of their patients.

"In the early '30s and before, a relatively large percentage of the population were having their teeth extracted and dentures placed. Many dentists limited their practice to dentures . . . Now, preventative dentistry has enabled people to keep most of their teeth all their life."

At times, it wasn't an easy transition. When he was 14, Dr. Scott had two front teeth knocked out during a football game. His local dentist reinserted the teeth but, not surprisingly, the pulps died. After 32 treatments, when the dentist was finally satisfied that the canals were ready to be filled, he flooded them with a silver nitrate solution.



Cover of the CDA Journal 1935.

"My teeth turned almost black . . .," recalled Dr. Scott. "My uncle Harry Garvin took one look at those teeth when I visited him in Winnipeg a year later, and he had me in his office in a matter of hours. He cut off the crowns, then placed endodontic posts with porcelain facings and metal backings. You couldn't keep the smile off my face after that."

In 1938, however, based on the Mayo Clinic's belief that endodontically-treated teeth were a source of focal infection, and should be removed, a prominent Vancouver dentist advised Dr. Scott to have his two front teeth extracted and replaced with a fixed bridge.

Today, of course, endodontic therapy is firmly entrenched in dentistry. With the advent of gutta percha and modern techniques, it

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

is possible to successfully complete a root canal during a single appointment.

Oral surgery has come a long way, too. In Dr. Garvin's time, tissue grafts, bone augmentation and the other intricate procedures so prevalent in dentistry in the 1990s were unheard of. Oral surgery, when it was done at all, consisted primarily of exodontia or simple gingivectomies.

Dental materials were equally rudimentary. In 1934, when Dr. Scott entered dental school, silver amalgam was the most widely-used restorative material (as it is today). But the mercury and silver were typically mixed in the dentist's hand, with excess mercury being squeezed out of the amalgam through a cheese cloth. A far cry from the encapsulated amalgam used in dental practice today, and the strict guidelines on waste disposal.

Even in the 1930s, thanks to silicate, tooth-colored restorations were possible in anterior teeth. Porcelain jacket crowns were also available, but these were fragile, difficult to handle, and offered limited success.

"If your patient planned an extensive trip to Europe, you would bake them an extra set of porcelain jacket crowns to take with them in the event one of the crowns fractured," recalled Dr. Scott.

Not surprisingly, gold foil was (and is) the ultimate restorative material. But gold was just as expensive in the early days of dentistry, relatively speaking, as it is now.

Dr. Scott was introduced to composites in 1966, when UBC's Dr. Richard Roydhouse brought some new "white" material to his dental appointment and asked to have it placed on his front teeth. That led to three years of experimentation with various formulations of 3M's composite material, which eventually became known as Addent.

At the same time as Drs. Scott and Roydhouse were conducting their research on Addent, Dr. Michael Buonacore was working on his own material. In the process, he developed the acid-etch technique for bonding composites to



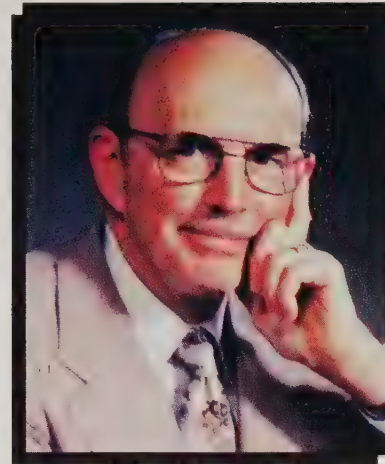
Then: Capt. Bill Scott, 1944.

enamel — a huge breakthrough. Equally important may be the work that Drs. Ron Jordan and Mike Suzuki did on light-cured composite fillings. But, says Dr. Scott, "The jury is still out on the longevity of composite fillings for occlusal surfaces of posterior teeth."

The introduction of composite materials also led to some major developments in the bur industry — as Dr. Scott recounts:

"Thanks to the necessity of finding burs or stones that would trim the new composite fillings, I was in the right place at the right time to help develop the multibladed carbide burs for finishing and polishing. This connection with the Beaver Dental Company has been a great find for the dental profession . . . We have had an amazing breakthrough in cutting efficiency with the multi-fine, cross-cut burs, the helical-spiral and fine cross-cut fissure burs and many other excellent designs that were unheard of during the first 30 years of my practice . . . George Beaver's company has done outstanding work in the development of the bur industry."

Shortly after the development of composite materials, the dental profession was enhanced through the introduction of the light-curing technique for porcelain, as well as bonding, veneers, and implants. Esthetic dentistry — as the rapid growth in this field makes clear — is here to stay.



Now: Dr. William Scott, 1994.

But materials are not the only aspect of dentistry to undergo radical change in the last 60 years. Even the way dentistry is practised has undergone some important alterations.

As a student, Dr. Scott was taught to practise his profession standing up. There were even pictures and illustrations in the textbooks of the day showing aspiring dentists the correct way to stand in various clinical situations.

Finally, after several years in practice, the students in one of Dr. Scott's study clubs convinced their mentor to sit down on the job. Even though he had to design his own equipment and have it custom made to accommodate his change in working habits, Dr. Scott now believes that it ultimately saved him from an early retirement.

"When I started practice in 1938, the old dental engine and pump dental chair was all that was available. That was not quite so bad as the portable chairs that we had to use in the Dental Corps during the war. My back will never be the same after standing and bending over for the first 25 years in practice."

Dr. Scott also remembers how frustrating it was to take an impression in his early days in dentistry. Back then, the prescribed method was to take a full-arch impression with plaster. Not only did the patient find the procedure extremely unpleasant, it was a difficult job for the dentist to remove the im-

pression from the mouth, reconstruct the pieces together, pour and separate the final cast.

Fortunately, the advent of alginate made a great difference to the accuracy and patient comfort of impression taking. Accuracy was further improved with the introduction of the reversible hydrocolloids, but this material is technique sensitive and difficult to work with. Today, most dentists rely on thiokol and various silicone derivatives. These materials are often used in conjunction with fine braided cords, impregnated with an astringent or hemostat, which are placed at the gingival crevice.

Although these new materials are easier to use and more pleasant for the patient, they have their drawbacks. Still, the art of taking impressions has changed dramatically from the 1930s and '40s, when "wax, wax compounds, and plaster was all that was available, and copper band and inlay wax were widely used to take individual cavity impressions."

Even dentures — despite the fact that they now play second fiddle to implants — have undergone remarkable changes in the past 60 years. But the biggest breakthrough probably came when vulcanite was replaced by acrylic denture material.

The most important advances have probably occurred in the area of restorative dentistry, however. In the 1950s, for example, the profession was changed forever by the introduction of the first porcelain-fused-to-metal crowns. And it wasn't long before dental suppliers had developed the technology and materials to actually bake porcelain onto the metal alloy.

"It was as if the sun had finally broken through for esthetic dentistry," recalls Dr. Scott.

In the early years of Dr. Scott's practice, zinc oxide and eugenol paste were routinely used to cover exposed pulps. The failure rate was high, but no other materials were available — until someone discovered that placing calcium



The changing face of the Journal of the Canadian Dental Association. . . covers of the Journal from 1944 to present.

hydroxide over the exposure would cause secondary dentin to be laid down.

Similarly, pit and fissure sealants — a spin off of the composite filling materials — were a significant preventative measure that changed the face of pedodontics.

Another area where dentistry has changed over the years is in the development of the team approach. When Dr. Scott entered practice in 1938, he was a solo practitioner in every sense of the word, as were the vast majority of his colleagues. Like them, he not only treated his patients' teeth, he cleaned them as well.

"In the so-called 'dirty thirties,' dentists would not charge for doing a prophylaxis," Dr. Scott recalls. "In fact, many patients

would object to paying a fee for an examination or "some scaling," feeling that unless the dentist had placed a filling, he really hadn't done anything to warrant a fee."

But both dentists' fees and the concept of "solo" practice began to change after the Second World War. Fees went up as prosperity returned to North America with the post-war boom, and in 1951 the first dental hygienist was registered in Saskatchewan. The team concept really came into being in Canadian dentistry in 1971, however, when the first certified dental assistant was licensed.

Post-war prosperity also increased the bargaining power of Canada's labor unions, and with that power came a demand for dental plans.

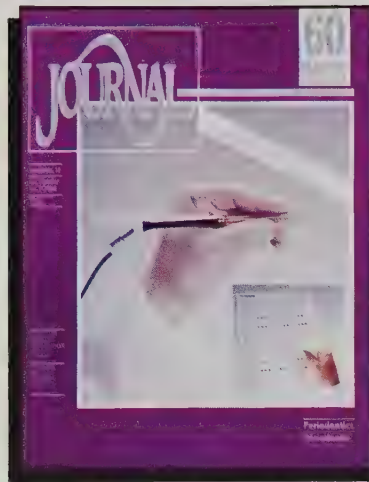
Dr. Scott recalls an early 1950s' meeting of the Health Insurance Studies Committee. The United Automobile Workers Union had come over from Detroit to talk about dental health plans. Their representatives weren't worried about the cost of the plans — that's how confident they were of their new strength — only about how the plans should be set-up and structured.

"That was the first I had heard about dental plans," said Dr. Scott. "Today, in some dental offices, over 80 per cent of the patients are on a dental plan. Many dental patients would not have any work done were it not for these plans."

But there have been some negative developments in the profession as well. In the mid 1950s, for example, British Columbia gave up trying to control the province's "bootleg" denture labs and began licensing dental mechanics. Other jurisdictions quickly followed suit.

One thing that hasn't changed in dentistry, particularly in B.C., is the popularity of study clubs. The Vancouver Gold Foil Study Club started in about 1934, followed by the inaugural meeting of the Diagnosis Study Club in 1939. Today there are more than 40 different study clubs in B.C.

Over the years, with the birth and refinement of distinct dental specialties in Canada, a number of



Cover of the CDA Journal 1994.

the clubs have narrowed their focus, and concentrate on specific aspects of dentistry. But then, who could have imagined, 60 years ago, that the oral and maxillofacial surgeons of today would actually have the ability to change the shape of patients' jaws and facial contours. It's a far cry from the 1950s, when the main role of the oral surgeon was to assist the dentist with difficult extractions or impactions, and it's changing the face of restorative and esthetic dentistry.

While the biological principles of orthodontic treatment have not changed significantly during the past six decades, treatment techniques and materials have changed dramatically. The remov-

able, active orthodontic appliances have gone through minimal basic changes, but the fixed orthodontic appliances have moved from "pinched" gold and stainless steel bands to preformed stainless steel bands, and eventually to brackets bonded directly to enamel.

Practice management has changed over the past 60 years, too! The advent of computers has revolutionized the business side of dentistry. From automated patient recall, to on-line claims processing, the computer has moved dental practice management into the fast lane.

In so many ways, the past 60 years have been glorious for the dental profession and the CDA Journal. Full of change and growth, full of new ideas. From the birth of CDA's Dental Awareness Program, to the improvement in the oral health of Canadians, dentistry has grown and developed into a strong, caring profession. The key was taking the concept of prevention to a new plane.

Today, with dental plans in jeopardy through taxation and possibly through employer roll-backs, and with Canadians struggling to recover from the latest recession, it's difficult to predict what the immediate future holds. Only the next 60 years will tell. ■

In Communiqué This Month . . .

- Finance Committee Releases Pre-Budget Consultation Report
- CDA, BDA, ADA Respond to BBC's Amalgam Story
- CDA Holds Annual Planning Session
- CFDS and Surgeon General Cut Costs By Merging Support Staff

Special Features

- Profile: Mr. Michel Hart - A Friend of Dentistry
- Personal Finances: RRSP Decisions A Tough Choice in 1995
- Viewpoint: BBC's Poison in the Mouth Program Sends the Wrong Message

... And More

Look for these stories and more in the January issue of Communiqué. CDA members receive Communiqué six times per year in the language of their choice as a benefit of membership in CDA. For more information, or to join your national association, call 1-800-267-6354.

1935 - 1995

60
YEARS OF
PUBLICATION

Celebrating 60 Years of Publication: The *Journal of the Canadian Dental Association*

P. Ralph Crawford, BA, DMD

The publication of this issue — Vol. 61, No. 1 — marks the 60th anniversary of the founding the *Journal of the Canadian Dental Association*. In 1935, in the midst of North America's worst economic recession, men of foresight and vision began a proud tradition of Canadian dental journalism that has never been surpassed.

Never was their task easy, never did they retreat when the burden was heavy. We owe our *Journal's* founders a great debt.

In fact, Canadian dental journalism began long before 1935. The first Canadian dental journal, the *Canada Journal of Dental Science*, published by Dr. W. George Beers of Montreal, was actually founded in 1869. As a clinician, teacher, dean, patriot, military officer and athlete (he developed the rules of lacrosse), Dr. Beers was one of the most influential dentists of the day. But his *Canada Journal of Dental Science* ultimately succumbed to financial difficulties in 1876, with only a few issues appearing in its final two years of publication.

The *Dominion Dental Journal*

Dr. Beers persisted with his journal dream, however, and 13 years later, in January 1889, he launched the *Dominion Dental Journal*. It remained the Canadian dental profession's main organ of written communication for more than 40 years.

The need for this type of communication is made amply clear by the information void that occurred between 1874 and 1889, when Canadian dentists had no regular dental journal. Today, only the scant infor-

mation published in newspapers and private letters is available to record the true progress of dentistry during those 15 years.

One of the remarkable aspects of the *Dominion Dental Journal* is that it had only two editors in its entire 44 year history. After Dr. Beers' death in 1900, the editorship was taken on by Dr. Albert E. Webster of Toronto, who held the post until 1935. Dr. Webster was another of those "giants" among men. He was a dentist, physician, teacher, clinician, writer and philosopher, in addition to serving as dean of the Royal College of Dental Surgeons from 1915 to 1923.

The idea of Canada's national dental association getting into the publishing business wasn't new. In fact, CDA's leaders first began discussing the publication of a national dental journal in the 1920s. Many argued that there were already enough journals to serve the profession. But at the time, only one dental publication, the *Journal of the Ontario Dental Association* (later called *Ontario Dentist*), was actually controlled by the profession. The others — the *Dominion Dental Journal*, *Oral Health*, and *La Revue Dentaire Canadienne* — were in private hands.

Finally, in January 1935, following years of discussion and negotiation, the *Dominion Dental Journal* and *La Revue Dentaire Canadienne* ceased publication and the *Journal of the Canadian Dental Association* was launched.

Dr. Webster was appointed editor emeritus of the new publication. In his parting editorial, published in the last edition of the *Dominion Dental Journal* in December 1934, he pro-

phetically stated: "A profession is based on its written word. Without it no progress can be made."

Another Milestone In the History of Dentistry

In January 1935, Dr. M.H. (Harry) Garvin of Winnipeg was rightfully appointed the new *Journal's* editor-in-chief. He began his prestigious editorship with this salutation, which appeared on the first page of the first issue in 1935: "With this issue, the *Journal of the Canadian Dental Association*; *Le Journal de l'Association Dentaire Canadienne* goes into Volume One, Number One, thus making another milestone in the history of dentistry in Canada."

Dr. Garvin was another of those "giants" among men. Throughout his long career, he rose through the ranks to become president of almost every organization he joined. He was totally committed to the concept of a national dental journal being published under the auspices of the national association, and had toiled for years to bring the *Journal* to press. When that finally happened, he edited the magazine for more than 17 years, and ran the *Journal* from a battered desk in a back room of his Winnipeg dental office.

From the very outset, the *Journal* was committed to the principle of bilingualism. The first editor of the French section was Dr. Philippe Hamel of Quebec City. Dr. Hamel was a true pioneer of French dental journalism in Canada. Although he only served as French editor for two years, his perfect French style set the tone for the French section of the *Journal* for the next 60 volumes.

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

Editors of the *Journal*:

1935 - 1953	Dr. M.H. Garvin
July 1953 - 1959	Dr. W.J. Dunn
1960	Dr. E.R. Bilkey
1961 - September 1972	Dr. F.H. Compton
October 1972 - June 1973	Diane Charter
July 1973 - December 1974	Dr. R.M. Grainger
1975	Patricia Lundie
August 1976 - April 1979	Diane Charter
May 1979 - March 1981	Elizabeth McKee
April 1981 - August 1984	Clarence Metcafe
September 1984 - December 1987	Carolyn Hackland
January 1988 -	Dr. P.R. Crawford

French Editors:

January 1935 - March 1937	Dr. Philippe Hamel
April 1937 - April 1946	Dr. Alcide Thibaudeau
May 1945 - December 1964	Dr. Gérard de Montigny
January 1965 - December 1968	Dr. Georges Pelletier
January 1969 - September 1971	Dr. Marcel Tenenbaum
October 1971 - June 1974	Dr. Paul Simard
July 1974 - December 1974	Dr. Gérard de Montigny
January 1975 - December 1980	Dr. Robert Lambert
January 1981 -	Dr. Pierre Desautels

The Editors

Throughout the *Journal's* 60 years, there have been only six dentists who served as editors. As noted above, Dr. Garvin was editor for almost 18 years. He was followed by Dr. Wesley Dunn, who took on the editorship in 1953. Dr. Dunn's Guest Editorial — "The *Journal* — Still the Window of the Profession" — which appears on page 11 of this issue, provides only a small insight into his great command of the English language. He was equally respected for his administrative ability, and the manner in which he guided the *Journal* more than 40 years ago.

Dr. Frank Compton, the *Journal's* first full-time editor, took on the editorship in 1961. He subsequently brought great credit to Canada when, in 1967, he became the first and only Canadian to be elected president of the American Association of Dental Editors. His skills were further recognized in the following year, when he was awarded the William J. Gies Editorial Award. A few brief lines in the 1967 CDA official transactions tell a much larger story: "The *Journal of the Canadian Dental Association* is enjoying a high stature among professional publications around the world and this is due to the services rendered by the editor Dr. F.H. Compton and the associate editor Dr. Georges Pelletier."

Dr. Edward Bilkey was editor in 1960, while Dr. Robert Grainger served from July 1973 to December 1974. In 1976, Dr. Robert Turnbull of the University of Toronto was appointed scientific editor, and given the responsibility of conducting the *Journal's* peer review process. Since its inception, the *Journal* has always published original, peer-reviewed

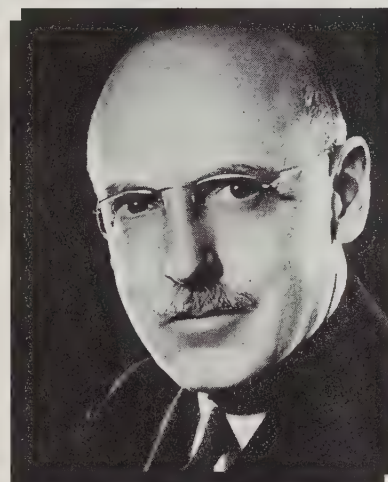


Dr. Philippe Hamel, 1884 - 1954.

material. And to this day, Dr. Turnbull oversees the peer review of the hundreds of manuscripts submitted to the *Journal* each year.

From 1975 to 1987, the pattern of dental editors was broken when six non-dentists occupied the editor's chair. During these years, more priority was given to news and general interest articles. However, the editor's role returned to a dentist in 1988 with the appointment of Dr. P. Ralph Crawford, and in 1991 the stewardship of the *Journal* was ensured when Mr. Terence Davis became the publication's first managing editor.

Following the short two years that Dr. Hamel set the course for the *Journal's* French section, seven distinguished editors have overseen this area of the publication. Dr. Alcide Thibaudeau, a professor at the University of Montreal, headed the French section for nine years from April 1937 to April 1946. He was followed by Dr. Gérard de Montigny, who held the post for 18 years



Dr. M.H. Garvin, 1880 - 1974.

until December 1965. For many years, Dr. de Montigny accepted the added responsibility of translating the entire list of the annual transactions of CDA's board of governors. A special note in the 1965 CDA transactions read: "The contribution of Dr. de Montigny to Canadian journalism assures for him a prominent place in the annals of Canadian dentistry."

Dr. de Montigny was followed in the position of French editor by Drs. Georges Pelletier, Marcel Tenenbaum, Paul Simard, Robert Lambert and Dr. Pierre Desautels, from the University of Montreal, who became the *Journal's* French scientific editor in 1981. Ten years later, in 1991, both Dr. Desautels and Dr. de Montigny were awarded the CDA Award of Merit for outstanding service to the *Journal* and their profession.

Growth and Development

In his opening editorial in 1935, Dr. Garvin wrote: "The publication of a journal is intimately linked with

the growth and development of our national association."

And indeed, growth and development have occurred. When the *Journal* was founded in 1935, CDA had no full-time employees. As Dr. Dunn points out in his Guest Editorial, by the time he became part-time editor in 1953, CDA had four full-time employees. Today a staff of more than 40 works in CDA's Ottawa headquarters.

In 1935, the *Journal's* circulation stood at just over 4,000. Today it is mailed to more than 18,000 readers. Similarly, in 1935 there were just over 100 English-language dental publications in the world, while today there are more than 1,000 dental journals and newsletters competing for the most recent dental articles as well as for advertising dollars.

Over its 60 year lifespan, the *Journal* has undergone considerable — and continuous — change in its make-up and appearance. Initially published in the common 6½ x 9½ inch format of the day, it changed to its current size of 8½ x 11 inches in 1970. Established as a bilingual publication, the *Journal* carried both languages in the same issue until 1984, when a policy of publishing separate English and French issues was adopted. This allowed dentists to receive the *Journal* in the language of their choice.

Published in Toronto for its first 45 years, the *Journal* finally moved to CDA's national headquarters in 1980. Back then, the publication was put together on a lay-out table using the old cut-and-paste method. Today it is produced entirely on CDA's desktop system, and sent to the printer on seven or eight computer discs.

Tomorrow

And what of tomorrow and the next 60 years? Will the written journal as we know it go the way of the dinosaur? Or will it survive and adapt?

Dr. Richard Simonsen, in an editorial written for the November 1994 issue of *Quintessence International*, raises the question: "Will we be turning more and more to our computers, equipped with CD-ROM capability, for the latest in published dental articles? Will our offices have rows and rows of compact discs instead of journals in the bookshelves?"

Whatever the future may hold for the *CDA Journal* — be it the printed page or the electronic screen — the

THE JOURNAL OF THE CANADIAN DENTAL ASSOCIATION

LE JOURNAL DE L'ASSOCIATION DENTAIRE CANADIENNE

ESTABLISHED 1935

VOL. 1, NO. 1

Subscription Price in Canada, \$2.50 per year; Great Britain, the United States and all other countries, \$3.00 per year.

OFFICIAL ORGAN OF THE CANADIAN DENTAL ASSOCIATION
WITH A MEMBERSHIP OF 4,050

M. H. GARVIN, D.D.S., Winnipeg - Editor-in-Chief
PHILIPPE HAMEL, B.S., D.D.S., Quebec - Redacteur Section Française
STEPHEN A. MOORE, London, Ontario - Business Manager
E. DeWITT HUTT, Toronto - Advertising Manager

Office of Publication

CONSOLIDATED PRESS, LIMITED, 73 RICHMOND ST. WEST, TORONTO

JANUARY CONTENTS

	Page
The Journal	3
Proclamation	6
"A Serious Duty to Perform"	7
A National Journal	8
Marking an Epoch	10
Greetings from the Medical Profession	13
Preventive Dentistry—Its Possibilities and Limitations	14
Radiography in Dentistry	21
The Function of Artificial Dentures	24
Canadian Central Bank	29
The Journal and Its Friends	31
Whither Dentistry	32
Editorial	33
News from the Provinces	35
Obituary	39
Officers of The Canadian Dental Association	52

Section Française

Confection D'Une Prothese De "Substitution Immediate" Avant L'Avulsion Des Dents Naturelles Condamnees a L'Extraction	43
Reunion Mensuelle—La Societe Dentaire de Montreal	48
Epidemie De Scorbut En 1934	49
Editorial	50-51

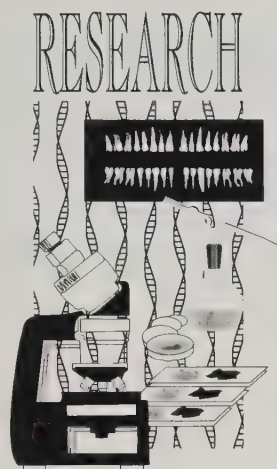
Mention The Journal to Advertisers

Masthead — Vol. 1 No. 1, 1935

aim of this publication should never waiver. It must adhere to the principles laid down by the founders in 1935, which were never better expressed than they were by Dr. Garvin in his first editorial, published in Vol. 1 No. 1:

"Our *Journal* stands at the door ready to broadcast throughout the Canadian profession an accomplishment in any one section of the profession, ready to bridge the gap between professional achievement and the public needs. It aspires, through our dental leaders, to mould the thought of the profes-

sion, to guide its hopes and clarify its problems, supporting all things which elevate and inspire. It will glean from every phase of dental life, from every realm of scientific endeavor. The *Journal* hopes to speak for our Association and to be its official organ, serving as a mirror of dental life in Canada and at the same time being a journal of constructive opinion, fighting in season and out of season for the highest and noblest principles, thus representing the best traditions of Canadian dentistry." ■



Survey of Knowledge of Infectious Disease and Infection Control Practices of Dental Specialists

Joel B. Epstein, DMD, MSD

Richard G. Mathias, MD, FRCP(C)

David V. Bridger, DDS, MSD

ABSTRACT

A questionnaire was developed to assess the knowledge of clinical specialists regarding infectious disease as well as their infection control practices. The questionnaire was mailed to 202 dental specialists in British Columbia. Seventy per cent returned completed surveys. Their responses indicate that the mechanisms, route and risk of transmission of the viral pathogens of importance in dental practice are not clearly understood. However, infection control practices closely follow the guidelines set forth by the Canadian Dental Association and the licensing bodies, including immunization for hepatitis B (82 per cent), glove use (in 89 per cent of non-surgical and 95 per cent of surgical procedures), and sterilization/disinfection of dental handpieces (94 per cent). Compliance with infection control guidelines was similar to that reported in the United States, where strict enforcement has been instituted. The majority of dental specialists (84-88 per cent) were either treating or willing to provide treatment to patients with infectious disease. Continuing education in the area of infectious disease is needed to improve dentists' understanding of the risk of transmission to dental providers and patients. This will ensure that compliance with infection control recommendations and appropriate patient care practices continue.

SOMMAIRE

On a préparé un questionnaire pour mesurer les connaissances des spécialistes cliniques touchant les maladies infectieuses et les mesures pour réduire les risques d'infection. Ce questionnaire a été posté aux spécialistes dentaires de la Colombie-Britannique et 70 p. cent y ont répondu. Les mécanismes, les voies et les risques de transmission des agents pathogènes viraux qui sont importants à surveiller en dentisterie sont mal compris. Les mesures pour réduire les risques d'infection suivent de près les directives de l'Association dentaire canadienne et de l'ordre professionnel de la province, y compris l'immunisation contre l'hépatite B (82 p. cent), le port de gants (89 p. cent pour les procédures non chirurgicales et 95 p. cent pour les procédures chirurgicales) et la stérilisation ou la désinfection des pièces à main (94 p. cent). Ces données sont similaires à celles des États-Unis où les mesures adoptées sont strictement mises en vigueur. La majorité des spécialistes dentaires (84 à 88 p. cent) traitent les personnes atteintes d'une maladie infectieuses ou sont disposés à les traiter. Dans ce domaine, il faudrait que des cours soient offerts en éducation permanente pour qu'on comprenne mieux les risques de transmission entre les professionnels dentaires et les patients. On s'assurerait ainsi que les professionnels dentaires

continuent à se conformer aux recommandations données et à bien soigner leurs patients.

Introduction

There has been considerable debate regarding infectious disease and infection control. This interest has focused primarily on the potential for blood-borne viral pathogens, including hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV), to be transmitted in dental practice.¹⁻⁷ Canadian infection control recommendations have emphasized that guidelines and actions must be based on a demonstrated risk for infectious disease transmission, and not on theoretical risk alone. To date, the Canadian approach has also emphasized voluntary compliance. This should be contrasted against the zero-risk tolerance and enforcement approaches that have dominated the development of American standards.^{8,9}

A serologic survey of 704 dental professionals for HBV was conducted in Vancouver in 1987 and 1988.¹⁰ Race (Asian origin), age, and years of practice were the only significant factors identified in predicting risk of infection. The use of gloves was not shown to be effective in reducing HBV infection, although the confidence limits were wide.¹⁰

Recent changes have occurred in the pattern of glove use in den-

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

tistry, which may not have been in effect long enough to demonstrate a protective effect. However, as percutaneous exposure (sharps) may represent the greatest risk for transmission, relying on gloves to protect providers may be unrealistic. It was therefore concluded that the protection offered by gloves appears to be inadequate to prevent the infection of the dental worker.

Similarly, there was no visible reduction in the rate of infection among those using masks or protective eye-wear. There was also no correlation between the presence of patients with identified risk factors for blood-borne infection in the practice and the serologic status of the provider. Furthermore, no difference was found in the serologic status of providers who routinely completed a health history of their patients.¹⁰ Studies have demonstrated that the use of infection control procedures may protect the patients of infected providers, however.⁹

In a survey of dental workers who attended infection control courses between 1988-1989,¹¹ approximately two-thirds reported using gloves with all patients and using eye protection and masks more than three-quarters of the time. The remaining participants used these barrier techniques on an occasional basis. At that time (1988-89), eight to 18 per cent of the respondents reported taking a risk factor history related to hepatitis or AIDS.¹¹ Percutaneous exposures in the prior six months were reported by approximately three-quarters of the survey participants. Approximately one-

Table I

Average Score of Assessment of Risk of Infection*

Risk of Infection When:	Potential Viral Pathogen		
	HSV	HBV	HIV
Kissing	3.06	2.86	1.40
On records	1.15	1.62	0.48
On X-rays	1.40	1.76	0.53
On surfaces	1.37	1.88	0.55
On burs	2.24	2.79	1.43

* average score for respondents using 0 = none, 1 = low; 2 = medium; 3 = moderate; 4 = high

half of this group had been immunized for HBV.

We have previously assessed the infection control practices of dentists in both British Columbia and the rest of Canada.^{6,10,11} An assessment of the current knowledge and infection control activities of a group of dental specialists in British Columbia was conducted to assess any changes that have occurred since these prior surveys. Also, the current survey results can be contrasted with those of recent American reports.^{8,12}

Methods

A questionnaire addressing provider knowledge of infectious disease and assessing their infection control practices was developed. The questionnaire, which was largely a modified version of prior surveys,^{10,11} was pre-tested by administering it to six general dental practitioners. Knowledge-based questions were developed to provide information on the providers' understanding of a number of the

specific viral pathogens (HSV, HBV, HIV) that may be present in oral secretions during dental treatment. These questions were recorded on a five-point visual analogue scale (none, low, minimal, moderate, high). The respondents were also questioned regarding their infection control practices.

Questionnaires were mailed to 202 dental specialists registered in British Columbia. Participation in the study was voluntary. Personal data and responses were not linked, allowing the data to be treated anonymously. Non-respondents were contacted by phone. The questionnaires were distributed and returned prior to a course on infection and infection control presented to the Dental Specialist Society in 1993. Responses were then entered into a computer database and analyzed using Excell (Microsoft, Kirkland, WA). Chi square tests were used for categorical variables and ANOVA was used for comparisons of means of three or more measures.

Table II

Average Score of Estimated Risk of Viral Transmission Following Viral Exposure*

Exposure On/In:	To health care worker from patient			To patient from health care worker		
	HBV	HIV	Flu**	HBV	HIV	Flu**
Intact skin	0.94	0.52	1.05	0.88	0.44	1.01
Intact mucosa	1.57	0.97	1.67	1.57	0.93	1.69
Percutaneous	2.96	2.28	1.87	2.85	2.22	1.84
Surgical	3.03	2.48	1.84	3.09	2.60	1.92

* average score for respondents using 0 = none, 1 = low; 2 = medium; 3 = moderate; 4 = high

** influenza

Table III

Risk of Transmission of Infectious Disease Via Dental Aerosols

Agent	Number	Yes (%)	No (%)	Don't Know
Hepatitis B virus	115	76 (66)	21 (18)	18 (16)
Hepatitis C virus	110	45 (41)	20 (19)	45 (41)
Human immunodeficiency virus	112	31 (28)	49 (44)	32 (28)
Herpes simplex virus	110	48 (43)	25 (24)	37 (33)
Tubercle bacillus	116	89 (77)	4 (3)	23 (20)

Results

In all, 137 providers returned the questionnaires — 106 males and 13 females (data on sex were missing in six cases). Two had begun dental practice that year. Six had practised from one to four years, 11 had practised from five to nine years, and 104 had practised more than 10 years.

Knowledge-based questions assessed the risk of infection from kissing, and through contact with contaminated saliva present on dental records, dental radiographs, office surfaces and dental burs (**Table I**). Participants were asked to estimate the level of transmission risk for the health care worker and patient following skin exposure, contact with intact mucosa, and percutaneous sharps exposure or surgical wound exposure to HBV, HIV and influenza (**Table II**). The perceived risk of infection via dental aerosols is shown in **Table III**. Responses regarding the perceived effectiveness of masks and gloves in preventing the transmission of infection are shown in **Tables IV and V**.

HBV was reported to be the viral causation of hepatitis by 85 per cent of the sample, while 84 per cent reported HIV as being the cause of AIDS. The cause of non-A, non-B hepatitis was identified as hepatitis C virus (HCV) by only 47 per cent of respondents, with most freely admitting that they didn't know.

Eight of those surveyed (6.4 per cent) reported a history of jaundice and 14 stated they were HBV positive (11.1 per cent). The average number of wounds reported in the previous six months was 1.23 (1.38 for those in practice more than 10 years, 0.46 for those in

Table IV

Prevention of Transmission of Bloodborne Pathogens by Use of Gloves

	Number	(%)
1. From patient to provider	12	(11)
2. From patient to patient	1	(1)
3. From provider to patient	4	(4)
4. 1 and 2	6	(5)
5. 1 and 3	14	(13)
6. 1, 2 and 3	75	(67)

practice from five to nine years, and 1.2 for those in practice less than four years).

Eighty-two per cent of the participants had been immunized for HBV. Of those not immunized, nine (seven per cent) felt it was not necessary, six (five per cent) were concerned with side-effects, and six (five per cent) did not identify reasons for their lack of immunization. Seventy-two per cent had received three doses of vaccine, 19 per cent felt that boosters were necessary, and 24 per cent had received booster immunization.

The use of barriers during patient care is shown in **Table VI**. Gloves were discarded and a new pair used for each patient by 71 per cent of respondents. Another 25 per cent preferred to wash and reuse gloves (data was missing for the remaining four per cent). The use of disinfectants is shown in **Table VII**. The majority of dentists (92 per cent; 110/120) either sterilized or disinfected their handpiece following each patient. Two-thirds reported using a heat process for this purpose. Forty-one per cent felt that the sterilization of hand-

pieces should be mandatory, and 57 per cent stated that this should be required after each patient.

Impressions or other devices sent to a dental lab were rinsed by 47 per cent of respondents and disinfected by 48 per cent. However, five per cent reported doing no rinsing or disinfecting.

The participants were also questioned regarding their office procedures for the management of waste materials. Sharps were disposed of in a sharps container by 82 per cent, while the others placed the instruments directly into the garbage. Blood-contaminated waste was disposed of in a special bag by 15 per cent, with the remainder disposing of this material in the general waste stream. Office materials were recycled by 7.5 per cent of offices.

Similarly, participants were questioned regarding their current infection-control practices. Eighty per cent reported that they acquired a patient history for HBV/HIV. This history was regularly undated by 67 per cent of participants. The dentists' awareness of the hepatitis carriers and



THE MASTER TOUCH PAD IS DESIGNED
TO MAKE YOUR WORK SIMPLER.



IN TEN DIFFERENT WAYS.

A-dec's new Cascade Master™ Touch Pad adds handpiece, cuspidor and light controls to our chair touch pad. It is easy to clean and barrier protect and simplifies your work by placing controls in one location at your fingertips.

You can choose the Cascade Master Touch Pad to operate a variety of A-dec's Cascade integrated handpiece delivery systems

and chairs, with and without cuspidor and lights. Whichever you choose, the Cascade Master Touch Pad makes all the control features of A-dec's integrated Cascade systems easier to use.

To learn for yourself how this new touch pad can simplify your work, contact your local authorized A-dec dealer or call 1-800-547-1883.

CASCADE 

Table V

Effectiveness of Wearing Mask in Protection of the Provider and Patient

Agent	Number	Yes (%)	No (%)	Don't Know
Hepatitis B virus	123	44 (36)	62 (50)	17 (14)
Human immunodeficiency virus	124	32 (26)	70 (56)	22 (18)
Herpes simplex virus	120	32 (27)	57 (48)	31 (26)
Tubercle bacillus	122	84 (69)	21 (17)	17 (14)
Garlic	118	64 (54)	40 (34)	14 (12)

risk groups in their practice — and their willingness to treat such patients — are shown in **Table VIII**.

In most cases, occurrences of post-treatment infections following non-surgical treatment were rare. Five respondents reported one event, eight reported two events, two reported three events and one each reported four, five and 10 occurrences. Infections following surgery were more common: six reported one event, two experienced two events, one had four events, three reported five events, two reported six and 10 events, and three reported 20, 25 and 75 infections, respectively.

Discussion

To determine their knowledge of the routes and risks of transmission, respondents were queried about their perceived risk of infection by several viral pathogens including HSV, HBV, HIV and influenza. HIV and HBV were selected because of their importance to dental providers and patients. With the exception of a single cluster, however, infectious HIV has not been demonstrated in a dental practice and HBV occurs rarely. HSV represents a virus that is frequently found in saliva, although it is transmitted by various routes. Influenza is a respiratory-spread virus that is transmitted via the upper respiratory mucosa.

For intact skin, there is no risk that any of these viruses will be transmitted to the health care worker (HCW) or the patient. Intact skin was estimated to be a more effective barrier than intact mucosa. For intact mucosa, the risk increased by approximately one-third.

No differences were evident between HBV and influenza, indicating that the routes of transmission of these diseases are not understood, and that the difference between the transmission of blood-borne pathogens and influenza is not recognized. The results of these questions may reflect a general impression of an increased risk of transmission of HBV as compared to HIV.

Despite the epidemiologic data regarding the low rates of HIV transmission in the health care setting to date, other than the Florida cluster, respondents described a small risk of transmission.^{1,2,14} Questions regarding percutaneous and surgical risk resulted in an increased estimate with respect to the risk of transmission of blood-borne pathogens. HBV transmission had the highest perceived risk, but there was also a high estimate of the risk of HIV transmission, and little increase in the estimate of risk for influenza.

HBV was felt to be almost as infectious as HSV orally, with moderate risk. The different risks of transmission for these two viruses were not recognized by the dentists. While HSV is transmitted orally, HBV and HIV are not. In fact, the risks of oral transmission of HBV and HIV are very low.

Respondents recognized that fomites are rarely a source of infection, while contact with X-rays was felt to be more likely to result in transmission than contact with dental records. Dental records, X-rays and surfaces would represent similar risks, as any virus present on them would be exposed to environmental conditions and would need to be transported, presum-

ably by fingers or instruments, to the provider or patient. In all of these cases, the risk is extremely remote. Respondents recognized the higher risk of transmission from burs, where there is a much higher probability of mucosa being damaged and hence parenteral transmission.

Respondents were also asked to identify the risks of transmission in more specific situations. The risk of HSV transmission was felt to be highest with kissing. However, the risk of transmission was felt to be higher when HBV is present on surfaces than it is for HSV. Respondents seemed to understand that HIV is less readily transmitted than both HSV and HBV. However, they identified a low level of risk with kissing even though HIV is not transmitted by casual contact (including kissing).

For upper respiratory mucosa, the risk for transmission of the influenza virus is very high. This risk is very low for HBV and HIV. Nevertheless, respondents perceived the risk of HBV and influenza transmission to be very nearly equal. It was expected that percutaneous and surgical exposure would be seen as high-risk events, particularly when the exposure was from patient to HCW, as this is the mode of transmission of HBV. Respondents considered the risk of HIV transmission via this route to be lower than the risk of HBV transmission, however.

The answers to these questions are important, not only because they increase our understanding of various means to reduce the risk of infectious disease transmission, but also because they identify a need for additional education.

Table VI

Current Use of Barrier Techniques

Diagnostic Procedures	All patients	High-risk Patients	Occasional only
Gloves	109 (86%)	6 (5%)	12 (9%)
Eye protection	83 (73%)	8 (7%)	23 (20%)
Masks	66 (55%)	17 (14%)	37 (31%)

Non surgical procedures	All patients	High-risk Patients	Occasional only
Gloves	112 (89%)	4 (3%)	10 (8%)
Eye protection	93 (78%)	8 (7%)	18 (15%)
Masks	69 (58%)	19 (16%)	32 (27 %)

Surgical procedures	All patients	High-risk Patients	Occasional only
Gloves	84 (95%)	3 (3%)	1 (1%)
Eye protection	80 (92%)	4 (5%)	3 (3%)
Masks	63 (73%)	11 (13%)	13 (15%)

Surgical exposure was seen as presenting the highest transmission risk for HBV. This risk was perceived to be less high for HIV, but still significant. Why surgical exposure was felt to present a higher risk than percutaneous exposure, when the route for surgical infection is percutaneous or permucosal, is not clear. Barrier loss results in increased risk in both cases. However, respondents may perceive that a greater dose of organism could be received via an exposure during surgery than would be received via a percutaneous exposure.

Current experience with the transmission of infection from HBV and HIV exposures (30 per cent for percutaneous HBV exposure and 0.3 per cent for HIV) might have led respondents to suspect a difference in the risk of transmission. It is likely that the seriousness of infection plays a role in the perception of the risk of transmission.

Glove use was felt to be effective in preventing the transmission of blood-borne pathogens from patient to provider, as well as indirect patient-to-patient transmission, by two-thirds of respondents. The best evidence that glove use actually prevents transmission exists for the infected provider-to-patient route.^{9,13,14}

There is no evidence in the dental literature to suggest transmission from patient to patient when the provider is not a carrier. However, there are only limited data indicating that gloves prevent infection of HCWs by blood-borne pathogens,^{8,15} and some evidence of a lack of protection in other studies.^{10,16} In effect, much more protection of HCWs is attributed glove use than is supported in the literature.

The role of aerosols in the transmission of blood-borne pathogens is poorly understood. Aerosols were identified as a potential route of transmission for HBV by two-thirds of respondents, HCV by less than half, and HIV by more than one-quarter. While HSV is a respiratory virus, less than half of the respondents identified a risk of transmission via aerosols. Of the blood-borne pathogens the perceived risk for transmission of HBV via aerosols was estimated to be the highest, which likely reflects a general understanding of increased risk, but not the route of transmission. The role of masks as barriers cannot be understood when the risk assessment is inaccurate.

An American survey on infection control practices of a random sample of 3,648 dentists was completed in 1986. Two years later, in 1988, 3,648 dental workers responded to a survey.¹⁷ An in-

creased acceptance of hepatitis B vaccination was seen, and glove use had increased to 80 per cent.

A 1988 survey of 3,800 members of a major American metropolitan dental society found that 89 per cent regularly followed CDC guidelines.¹² Protective eye wear was worn (89 per cent), new gloves were used for each patient (86 per cent), handpieces were sterilized after each patient (84 per cent), surgical masks were worn (67 per cent), and sharps were placed in puncture-resistant containers (61 per cent).¹²

In the survey reported on here, it was found that gloves were perceived to provide the best barrier and were used most frequently. Eighty-six per cent used gloves for all patient contacts during diagnostic procedures, 89 per cent during non-surgical procedures and 95 per cent during surgical procedures. Current Canadian Dental Association guidelines recommend the use of gloves when contact with mucosal surfaces is anticipated, as well as during all surgical procedures.

Gloves were discarded after each use by 71 per cent of respondents and washed between patient contacts by 25 per cent. Protective eye wear was used in 73 per cent of diagnostic procedures, even though no aerosols are produced.

**Table VII****Office Use of Disinfection or Sterilization**

	After each patient	After visible soiling	At day's end	Rarely	Cover
Dental chair	50%	19%	21%	9%	1%
Dental instruments	98%	2%	—	—	—
Dental handpieces	94%	1.7%	1.7%	0.8%	1.7%

Method of handpiece disinfection/sterilization: Heat 50%
Chemical 44%

While the use of eye wear may be becoming habitual, this is not occurring because of anticipated risk.

Consistent with earlier Canadian studies, 11.1 per cent of respondents stated that they were HBV sero-positive, and 6.4 per cent reported a history of jaundice.^{6,10} Eighty-two per cent of respondents had been immunized for HBV, 80 per cent routinely acquired a patient history of HBV/HIV, and 67 per cent updated this history on a regular basis. Sterilization or disinfection of handpieces was completed following each patient by 98 per cent, and two-thirds reported using a heat process. Dental operator surfaces were disinfected after each patient by 50 per cent and after visible soiling by 19 per cent. Dental impressions were disinfected by approximately one half of participating practitioners, rinsed by others, and received no treatment by approximately five per cent. Sharps were disposed of in a sharps container by 82 per cent of respondents and blood-contaminated waste placed in a special bag by 15 per cent. Office supplies were recycled by 7.5 per cent — otherwise garbage was disposed of in the usual waste stream.

While the survey indicated that sharps were disposed of in a puncture-resistant container in the majority of practices, no evidence of infectious disease transmission via medical or dental waste has been documented, even by sharps. In the future, the dollar cost, the environmental cost and the lack of risk associated with infection transmission due to medical waste will likely be scrutinized. Waste disposal is currently regulated in some jurisdictions, and regulations may be based on the volume gen-

erated as well as the classification of the waste produced.

Compliance to the U.S. Occupational Health and Safety Administration (OSHA) blood-borne pathogen standard has been assessed in office visits.⁸ In this study, 100 randomly selected offices were contacted by letter and asked to participate. A total of 46 agreed to do so, 25 of which were then randomly selected. Of these, 95.5 per cent complied with an 82-item list of infection control procedures required by the OSHA standard, 98 per cent compliance was seen for barrier use (mask, gloves, gowns, eye protection), and 96 per cent of offices routinely autoclaved dental handpieces between patients. Compliance with recommendations on sharps containers was seen in all offices, but containers may not have been easily accessible in a few of them. It should be noted that, because of the voluntary nature of this study, only those offices with exemplary infection control practices may have participated.

In our study, we identified high compliance with current Canadian guidelines. These guidelines have not been imposed by government through sanctions, but have been promoted in a positive environment of information and education. The role that the media and public expectations have had in driving the ongoing review of infection control guidelines — and their implementation by practitioners — cannot be assessed from the results of our survey.

In a recent review article on the attitudes of dental providers to the delivery of dental care to HIV-infected and AIDS patients, Hardie randomly selected 15 of 21 articles published between 1987 and

1990.¹⁸ A mean of 62 per cent of dentists indicated a responsibility to treat HIV-infected patients, and a mean of 68 per cent would refer HIV-positive patients for treatment. The most common reasons for referral were a perceived stigma associated with treating HIV-infected individuals, the fear of transmission during a dental procedure, and a lack of knowledge.

In a 1988 survey of 3,800 dentists, 27 per cent of respondents indicated that they would treat HIV-positive patients, although fewer would treat patients with AIDS (19 per cent). Nevertheless, 49 per cent would treat patients with HBV, and approximately two-thirds would treat patients with HSV.¹² Reasons given for not treating HIV-positive patients were: other patients may stop coming to the office (47 per cent), not enough known about risk to provider (39 per cent), specialty clinics needed to treat appropriately (32 per cent), too time-consuming (19 per cent), too costly (18 per cent), and inadequate training (13 per cent). Only a small percentage of practitioners were willing to treat HIV patients in their office. Fear of infection rather than the desire to treat infected patients appeared to be the overriding reason for employing infection control guidelines.

Gerbert et al's¹⁹ survey of 600 dental workers in California found that those who practised more thorough infection control were also more likely to be willing to treat HIV-infected patients. Sixty-five per cent of participants felt responsible to treat the oral/dental needs of HIV-infected patients. However, due to the needs identified in Rydman et al's 1988 study,¹² 70 per cent referred pa-

Table VIII

Awareness of Risk Groups and Willingness to Treat

Risk group	Known patients in your practice			Would you treat in your practice		
	Yes	No	Don't Know	Yes	No	Don't Know
HBV carriers	49%	27%	24%	84%	16%	—
IDU	18%	25%	56%	62%	38%	—
Hemophiliacs	36%	59%	6%	77%	29%	1%
Male homosexuals	48%	10%	43%	88%	12%	—
Renal dialysis	28%	60%	12%	70%	29%	1%
Blood product recipients	44%	17%	39%	88%	12%	—

tients for treatment. Low correlation was detected between the workers' knowledge of HIV, their attitude toward providing treatment, and their application of infection control procedures.¹⁹

A survey of 297 California dentists²⁰ identified several barriers to the treatment of AIDS/HIV patients, including: perceived risk of infection of the provider (81 per cent), perceived difficulty with staff (81 per cent), fear of losing other patients (85 per cent) and lack of appropriate skills or knowledge (57 per cent).

In another study, education on HIV and AIDS was provided to 36 dentists. Controlled educational intervention consisted of periodic information bulletins and telephone conference calls with AIDS experts. When this group was compared to 66 dentists who had not been provided with education on HIV and AIDS,²¹ a statistically-significant increase in knowledge and willingness to treat patients was shown by the dentists who received the educational interventions.²¹

The majority of dental specialists who participated in our survey were aware of AIDS/HIV patients in their practice and were willing to treat those at risk for blood-borne pathogens (84-88 per cent). However, fewer were willing to treat patients who might have a more complex medical history, such as those undergoing renal dialysis. Similarly, fewer were willing to treat known injection-drug users (62 per cent). This may be due to a perception of increased risk of multiple infectious diseases among this patient population, and concern about reliability of

these patients.

A prospective study has not been undertaken to assess patient risk of nosocomial infection following dental treatment. To determine if oral infection occurred following dental treatment, we questioned participants with regards to post-treatment infections in their patients. Infections were rare following non-surgical treatment, but were more common after surgery: six respondents reported one event, two had two events, one had four events, three reported five events, two reported six and 10 events, and three reported 20, 25 and 75 infections, respectively. Whether infection control practices may affect the occurrence of infection is unclear, but based on this survey, infections following non-surgical therapy in an ambulatory population are rare. We were not able to assess the effectiveness of infection control procedures in preventing infections in this sample due to the small number reported.

Compliance with infection control guidelines in Canada, as reported in the present survey, has been achieved through education and by voluntary compliance. This should be compared to recent compliance rates in the United States, where government agencies have enforced compliance with threats of inspection and penalties.

Continuing education of dental specialists should be directed toward improving their knowledge of infectious disease transmission, and the mechanisms and routes of transmission. It is the only way in which an understanding of the need for, and compliance with, ra-

tional infection control guidelines can be achieved. Certainly, continuing interest in infectious disease and infection control will be seen on the part of the profession, auxiliary dental personnel and the public. ■

Dr. Epstein is a member of the medical/dental staff of the British Columbia Cancer Agency, and head of the division of oral medicine, clinical dentistry, at Vancouver Hospital and Health Sciences Centre. He is a clinical professor, faculty of dentistry at the University of British Columbia, and a research associate, faculty of dentistry, at the University of Washington.

Dr. Mathias is a staff member in the division of public health practice, department of health care and epidemiology, University of British Columbia.

Dr. Bridger is in private practice in prosthodontics, Vancouver, British Columbia.

Reprint requests to: Dr. J.B. Epstein, B.C. Cancer Agency, 600 West 10th Ave., Vancouver, B.C. V5Z 4E6.

References

1. Gruninger, S.E., Siew, C., Chang, S.-B. et al. Human immunodeficiency virus type 1 infection among dentists. *JADA* 123:57-64, 1992.
2. Capilouto, E.I., Cotton, D., Weinstein, M.C. et al. What is the dentist's occupational risk of becoming infected with hepatitis or the human immunodeficiency virus? *Am J Public Health* 82:587-589, 1992.
3. Epstein, J.B., Scully, C. and Porter, S.R. The risk of transmission of human immunodeficiency virus in dental practice. *Oral Health* 82:33-38, 1992.
4. Editorial. Risk of HIV transmission during dental treatment. *Lancet* 340:1259-1260, 1992.
5. Klein, R.S., Phelan, J.A., Freeman, K. et al. Lower occupational risk of human immunodeficiency virus infection



among dental professionals. *New Engl J Med* 318:86-90, 1988.

6. Epstein, J.B., Buchner B.K. and Bouchard, S. Hepatitis B and Canadian dental professionals. *J Can Dent Assoc* 50:555-559, 1984.

7. Epstein, J.B., Porter, S.R. and Scully, C. Non-A, non-B hepatitis and dentistry: A status report for the American Journal of Dentistry. *Am J Dent* 7:36-38, 1992.

8. Depaola, L.G., Ward, M.A., Grace, E. et al. Dental office compliance evaluation for the OSHA blood-borne pathogens standard and hazard communication program. *JADA* 124:61-65, 1993.

9. Centre for Disease Control. Recommendations for preventing transmission of human immunodeficiency virus and Hepatitis B virus to patients during exposure-prone invasive procedures. *MMWR* 40 (RR-8):1-9, 1991.

10. Noble, M.A., Mathias, R.G., Gibson, C.B. et al. Hepatitis B and HIV infections in dental professionals: Effectiveness of infection control procedures. *J Can Dent Assoc* 57:55-58, 1991.

11. Epstein, J.B., Rathee, N.N. and Mathias, R.G. Infection control: survey of dental health care workers. *Oral Health* 79:53-56, 1989.

12. Rydman, R.J., Yale, S.H., Mullner, R.M. et al. Preventive control of AIDS by the dental profession: a survey of practices in a large urban area. *J Pub Health Dent* 50:7-12, 1990.

13. Gooch, B., Marianos, D., Ciesielski, C. et al. Lack of evidence for patient-to-patient transmission of HIV in a dental practice. *JADA* 124:38-44, 1993.

14. Centers for Disease Control. Update: Investigations of patients who have been treated by HIV-infected health-care workers. *MMWR* 41:344-346, 1992.

15. Gonzales, E. and Naleway, C. Assessment of the effectiveness of glove use as a barrier technique in the dental operator. *JADA* 117:467-469, 1988.

16. Rheingold, A.L., Kane, M.A. and Hightower, A.W. Failure of gloves and other protective devices to prevent transmission of Hepatitis B virus to oral surgeons. *JAMA* 259:2258-2260, 1988.

17. Verrusio, A.C., Neidle, E.A., Nash, K.D. et al. The dentist and infectious diseases: a national survey of attitudes and behaviors. *JADA* 118:553-562, 1989.

18. Hardie, J. Problems associated with providing dental care to patients with HIV-infection and AIDS patients. *Oral Surg Oral Med Oral Pathol* 73:231-235, 1992.

19. Gerbert, B., Badner, V. and Maguire, B. AIDS and dental practice. *J Pub Health Dent* 48:68-73, 1988.

20. Gerbert, B. AIDS and infection control in dental practice: dentists' attitudes, knowledge and behavior. *JADA* 114:311-314, 1987.

21. Gerbert, B., Maguire, B., Badner, V. et al. Changing dentists' knowledge, attitudes and behaviors relating to AIDS: a controlled educational intervention. *JADA* 116:851-854, 1988.

IDS '95

26th INTERNATIONAL DENTAL SHOW

Cologne

27.03. – 01.04.1995

Journal Can. Dent. 01/95



24th GERMAN
DENTISTS' CONVENTION
March 31st – April 1st 1995

From March 27th until April 1st 1995 the International Dental Show Cologne (IDS) will be the central meeting place for the dental world.

About 700 exhibitors from 30 countries will provide a comprehensive overview of the innovations, further developments, processes, techniques and materials connected with dental health, prevention of tooth decay and cosmetic dentistry. And – the 24th German Dentists' Conference, being held parallel to IDS '95 will be of additional significance for your visit.

See you in Cologne for IDS '95!

COUPON

Edel Wichmann,
Cologne International Trade Shows,
Canadian German Chamber of
Industry and Commerce Inc.,
480, University Ave., Suite 1410,
Toronto, Ont. M5G 1V2,
phone (416) 598-33 43,
fax (416) 598-18 40

Please send me following information:

- ☐ Visitor's brochure IDS '95
- ☐ Preliminary list of exhibitors
- ☐ Advanced registration
- ☐ Travel packages
- ☐ Exhibiting conditions

Please attach your business card

**For further information
about the 24. German
Dentists' Conference
please contact:**

Bundesverband der
Deutschen Zahnärzte e.V.
- Bundeszahnärztekammer -
Universitätsstr. 71-73,
D-50931 Köln,
phone: (221) 4001-0,
fax: (221) 4061655



Verband der
Deutschen
Dental Industrie e.V.



Best for
Trade Fair Travel
Lufthansa

Köln Messe

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1



OTTAWA 1995

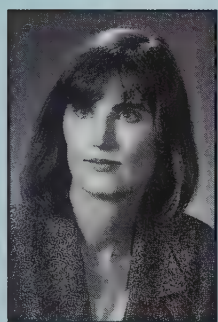
Canadian Dental Association Annual Meeting

August 26 - 29 • 26 - 29 août

Réunion annuelle de l'Association dentaire canadienne

UPDATE

Teaming Up: CDA 1995 Annual Meeting



During the past two years the CDA Annual Meeting has taken place at various times of the year, but the 1995 meeting will again be held in our favourite month of August. This year's convention

dates will be Saturday, August 26 through to Tuesday, August 29.

As we begin to settle back into our professional lives from the festive season, let me introduce you to our meeting destination for the 1995 CDA convention. Ottawa, the nation's capital will be our meeting place. During the summer months, Ottawa has an abundance of events taking place and attractions to enjoy. Known as a family-oriented city, Ottawa is a great place to combine a family vacation with professional education. We are developing a fun children's program and an exciting program for teens. As well as a delightful spouses' program. There will not be a shortage of activities for the entire family.

During the convention, many of the scientific lectures will take place in the Ottawa Congress Centre, a facility conveniently linked to the Westin Hotel and a short jaunt away from the Château Laurier. As you read this article, the 1995 Convention Committee is developing your Scientific Program. Topics to be covered during the convention include, crown and bridge and restorative dentistry; everyday oral surgery; diagnosis and pathology; implants, dental emergencies; infection control; orthodontics; periodontics; practice valuation; dental materials; practice management; and much more.

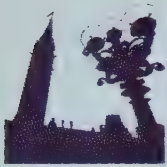
The theme of this year's meeting is "Teaming Up". The CDA Convention supports and promotes continuing education for dentists, but we all know that the education is really for the entire dental team. Therefore, we are encouraging as many dentists as possible to bring their dental teams with them by embarking on a 1 + 2 campaign. This campaign offers free registration to all CDA members who register before July 21, 1995 AND free registration for 2 dental team members for every dentist who registers before July 21, 1995. Now, can you afford not to bring your staff?

The CDA Convention's goal is to offer you more than your average convention. It will give a prime opportunity for you and your team to acquire new knowledge about the dental profession AND an opportunity to discover the heritage of Canada through a selection of national treasures. The 1995 *Preliminary Program* will be sent to you in the near future and over the next few months we will be introducing you to many of the numerous planned activities in more detail.

Plan now to attend!

Elizabeth MacSween, DDS
Chair
CDA 1995 Annual Meeting
Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario
K1G 3Y6

Tel.: 1-800-267-6354
Fax: (613) 523-3062



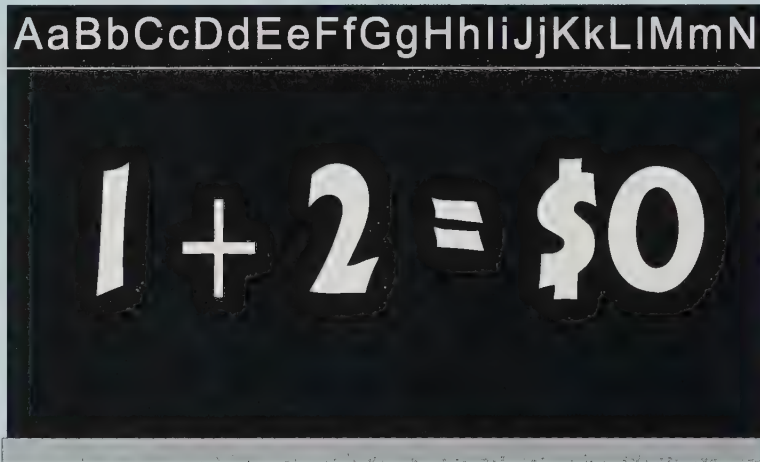
OTTAWA 1995

Canadian Dental Association Annual Meeting
August 26 - 29 • 26 - 29 août
Réunion annuelle de l'Association dentaire canadienne

Who says that "Nothing in life is free"?

The latest CDA 1 + 2 = \$0 campaign is proof that you can get something for free, even something good! As a benefit of your CDA membership, you can register for the CDA Annual Meeting at no cost (if you register before July 21, 1995). PLUS, this year for the first time ever, we will register two staff persons absolutely free with every dentist who registers for the convention (also before July 21, 1995).

Not only do you have the opportunity of attending the next CDA Annual Meeting, taking full advantage of all the great things the Convention has to offer: great scientific program, buzzing exhibit hall,



pants. Don't miss this opportunity to save \$\$\$ — register for the next CDA Annual Meeting before July 21, 1995.

Watch for the *Preliminary Program* which will be mailed to you in the new year or for the blue pages of the forthcoming editions of the *CDA Journal* for registration forms.

fun social program and special activities, but, two members of your staff can now enjoy the same opportunity at no cost to you or to them. CDA is committed to making the Annual Meeting not only highly interesting to every member of the dental team but extremely affordable, to all partici-

The CDA Annual Meeting *means* Continuing Education

As members of a profession that is in constant evolution, we know that it is crucial for you to keep abreast of any developments, any new techniques or the latest technologies. For you, continuing education means that you avidly seek out new information and remain on the look out for fresh new data in an endeavour to stay current.

Whether continuing education is mandatory or not in your province, what matters is your personal desire for learning. The CDA Annual Meeting is the perfect medium to help you achieve both purposes. Not only does it fulfill your yearning for learning, it also provides a means to obtain continuing education credits. Every hour spent in a course or lecture during the convention can earn you valuable continuing education credits. We will provide proof of attendance which can then be presented to your licensing body and counted towards the fulfillment of your continuing education requirements.

**THE CDA ANNUAL MEETING,
THE BEST WHEN IT COMES TO LEARNING
AND CONTINUING EDUCATION.**





FDI 1994 Post-Congress Tours — Australia & New Zealand

Following the most successful ever FDI Congress held in Vancouver from October 2 to 8, 1994, a group of delegates from Canada, Germany and France set off to extend their program with a two-week tour through parts of Australia and New Zealand. Although the numbers were small, the experience was beyond description and each participant is planning on attending future Congresses and post-conference tours.

The Australia tour included a stay in Sydney with more than the usual tours. Participants had the opportunity to hold koala bears, "hop" alongside with tame kangaroos, converse with cockatoos, pet snakes and ride down/up the world's steepest train, a truly frightening few minutes.

The highlight in Australia was a catamaran trip out to the Great Barrier Reef where swimming and snorkelling with turtles and exotic fish were the order of the day. Needless to say, in spite of the ongoing drought, the weather was most cooperative and umbrellas were not to be found.

Participants of the FDI 1994 Post-Congress Tour to Australia/New Zealand.

Standing left to right:

Norbert Christophe, France; Rolf Fahnmann, Gunther Lange, Germany; Maurice Moreau, Steve Weiss and Mel Charendoff, Canada.

Seated left to right:

Sylvie Christophe, France; Miki Friendly, Tour Organizer, Tourcan Vacations, Canada; Edda Urban, Germany; Jane Moreau, Jan Charendoff, Canada; Greg Dundee, Australia Tour Guide; Bertrand Christophe, France.

New Zealand painted a totally different picture with its millions of very green rolling hills of tropical, sub-tropical and northern trees. It was not unusual to see spruce trees growing alongside palm ferns. The country of only 3.5 million people (and 55 million sheep) was friendly, welcoming and people had wonderful senses of humour. There was no shortage of gourmet food of every imaginable description and activities ranged from beautiful stalagmite, stalactite caves brightly lit by millions of glowworms shining like diamonds to dining and dancing with native Maoris in their traditional environment to trudging through once busy gold mining camps and caves and ending the day at a magnificent resort lodge and being totally spoiled by the staff.

The tour was so successful that it has been decided that it will be offered again in 1995 following the 83rd FDI Congress being held in Hong Kong.

Tourcan Vacations of Toronto is the official tour operator for all CDA tours and members wishing more information or to register for FDI '95 and the post-congress tours (Bali, Thailand, Singapore, China, Malaysia, Orient Express Train, Australia, etc.) plus the 1995 Out-of-Country seminars are requested to call Miki Friendly at Tourcan Vacations. Local 416-391-0334 or 1-800-263-2995. Please note that there is limited availability on certain tours and early booking is highly recommended.





OTTAWA 1995

Canadian Dental Association Annual Meeting

August 26 - 29 • 26 - 29 août

Réunion annuelle de l'Association dentaire canadienne

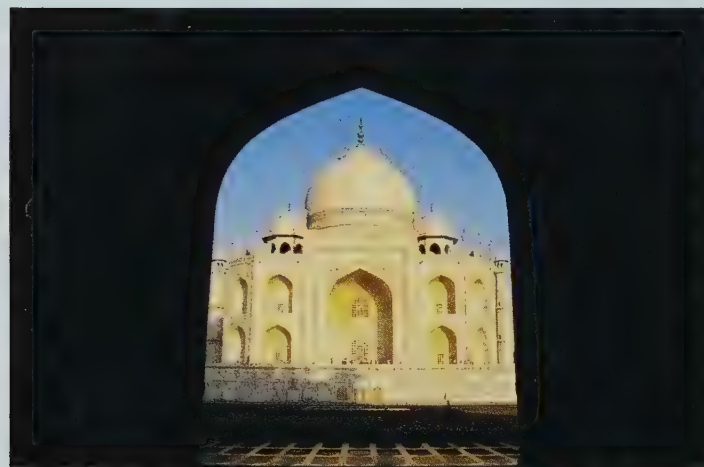
CDA 1995 Out-of-Country Seminars

A wonderful opportunity to experience first hand how dentistry is practiced in different parts of the world. Choose a destination and, in addition to sightseeing, we'll arrange for you to visit dental clinics and dental practices. We'll set up meetings with members of the national dental association and offer lectures on areas of interest.

Whether you visit Jerusalem, the City of Gold, ride an elephant in Jaipur, dance the night away to the sound of lively Greek music, enjoy the adventure of shopping in a Turkish bazaar, or observe the wildlife on African reserves, CDA Out-of-Country Seminars let you appreciate the sights and sounds of each destination and benefit from professional exchanges with your colleagues in the country of your choice. (Tour descriptions are only highlights.)

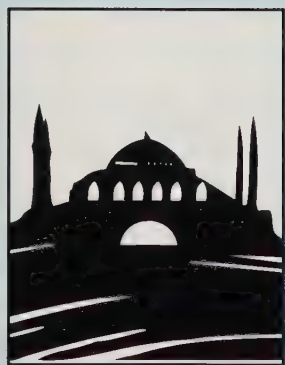
ISRAEL (February 15 - March 1, 1995)

A wonderful trip to explore Israel's historical sites. Drive along the Mediterranean coast and visit archaeological ruins in Caesarea. View the golden-domed Bahai Temple in Haifa and visit a nature reserve in Banias along the Jordan River. Visit ancient synagogues in Capernaum and Tiberias. Enjoy a sail across the Sea of Galilee. Visit Jericho, the oldest and lowest inhabited city in the world and enjoy a full day tour of the New City of Jerusalem.



INDIA & NEPAL (March 8 - 24, 1995)

This tour is full of delights for those interested in the ancient and intriguing legacy of India and Nepal. Visit and tour both Old and New Delhi, attend the famous light and sound show at the Red Fort of Agra including a tour of the Fort and its museum and walk through a local bazaar. In Jodhpur visit the city palace museum, observatory and palace of winds. Ride a brightly decorated elephant to the 17th century Amber Fort! Visit the Taj Mahal monument. In Khajuraho visit the 9th to 13th century temples and take a tour of a Tibetan refugee camp.



TURKEY (April 19 - May 2, 1995)

A trip that will take you to the great Byzantine Basilica built in the 6th century, the Blue Mosque (a 17th century Ottoman mosque) and the Hippodrome where chariot races and athletic events took place during the Roman Empire! Also visit the Topkapi Palace, the residence of Ottoman sultans housing the richness of 700 years of rule, with its Baccarat crystal chandeliers, persian carpets, priceless art and treasures. Turkey is home to a grand collection of art from many civilizations throughout the centuries. Enjoy the adventures of the Grand Bazaar and visit old cities such as Antalya and Pamukkale — where you can enjoy a swim in the hot spring pools!

OTTAWA 1995

Canadian Dental Association Annual Meeting
August 26 - 29 • 26 - 29 août
Réunion annuelle de l'Association dentaire canadienne



GREECE (June 17 - July 1, 1995)

Enjoy visiting the city of Athens with a tour of the Acropolis. From Athens embark on a classical tour of Greece with visits to ancient Corinth and its museum, Epidauros, Mycenae and Nauplia. In Olympia, visit the Sanctuary of Zeus, and the place where the Olympic Games had their origins. In Mykonos visit markets, beaches and enjoy fresh seafood and local entertainment. Get set also for a 4-day Greek Island Cruise with touring opportunities in Patmos, Kusadasi, Heraklion and the mountainous and beautiful Santorini.

KENYA (July 13 - 27, 1995)

Your safari begins at the Masai Mara Game Reserve, Kenya's richest reserve. Observe large free-roaming herds on the plains including the Big Five (Elephant, Lion, Leopard, Buffalo and Rhino). Also admire the Wildebeest, Gazelle and Zebra. At the Aberdare National Park visit The Ark, a unique lodge overlooking a large salt lick and waterhole that attracts wildlife both day and night. Enjoy the Samburu Reserve where the elephant, buffalo, cheetah, lion and leopard roam uninhibited. Be entertained by mischievous monkeys and watch sleeping crocodiles sun themselves at the river's edge.



FDI 1995 — Hong Kong (October 20 - 26, 1995)

If you attended FDI 1994 in Vancouver, you'll certainly want to repeat the experience. If not, then here is your chance to experience a meeting where dental professionals from around the world gather for the World Dental Congress. The package comprises airfare plus 5 nights accommodation (with breakfast) in Hong Kong. Here, you will want to enjoy the city and participate in the Convention.

For those of you who want to combine FDI 1995 with a holiday in the Far East, we propose post-congress tours to Bali (October 26 - 30), China (October 26 - November 6), Bangkok and Singapore (October 26 - 31) and the Bunga Raya (Singapore, Malaysia and Bangkok - October 26 - November 5).

For more information, contact Tourcan at 1-800-263-2995 or CDA Conventions at 1-800-267-6354.



OTTAWA 1995

Canadian Dental Association Annual Meeting
August 26 - 29 • 26 - 29 août
Réunion annuelle de l'Association dentaire canadienne

The 1995 CDA Annual Meeting:

Comprehensive Scientific Program

Whether you are looking for an in-depth review of the principles of pharmacology as they relate to dental therapy, a comprehensive study of an area of interest in endodontics, periodontics or prosthodontics, new concepts in nutrition, innovative ways to deal with medical emergencies in the dental office, or an overview of the latest dental materials, the next CDA Annual Meeting is sure to have something for you. Numerous scientific sessions are complemented by tips on practice transition, practice management, computers, financial investments, personal development and much, much more...

Every member of the dental team can benefit from the wealth of knowledge offered by clinicians and lecturers from all over North America. Well-known experts in their fields, these speakers have been chosen for their strong commitment to teaching. Dentists, dental assistants, hygienists, office personnel, dental technicians and students will gather in an atmosphere designed to promote learning and the sharing of information. "Teaming Up" is the rallying cry for 1995, with dental professionals meeting together and learning from each other.

In terms of your learning environment, you may prefer the setting of a large classroom where teachers impart their knowledge with the aid of the latest audio-visual techniques or you may favour a more "hands-on" approach whereby you will learn to master a new technique in a small group supervised closely by the instructor. The next CDA Annual Meeting offers both alternatives designed to enhance your personal learning experience during the convention.



An Opportunity for You to Play an Active Part in the Scientific Program

With a commitment to foster development, the CDA Annual Meeting is an ideal forum to present a new technique or share with your colleagues information which you deem important to the advancement of the dental profession. If this is the case, we invite you to present a Table Clinic, a fifteen minute presentation followed by questions and repeated as often as there is an interested audience during a 2 - 3 hour period. For further details on how you can register to present a Table Clinic, please write or fax the CDA Convention Department or consult the blue pages in the coming editions of the *Journal*.

THE OTTAWA 1995 CDA ANNUAL MEETING IS *THE* PLACE

OTTAWA 1995

Canadian Dental Association Annual Meeting

August 26 - 29 • 26 - 29 août

Réunion annuelle de l'Association dentaire canadienne



All the Elements of a Great Convention

Packed Exhibit Hall

Latest innovations, widest array of products, state-of-the-art technology as well as discounts, rebates and one-stop shopping are key words that describe the Trade Exhibit of the 1995 CDA Annual Meeting.

If you are looking to refurbish your entire dental office or to buy a new intra-oral camera; if you need a second chair, an air abrasive system, an upgrade on your computer or information about the latest insurance package; or, if you simply want to know what's new in fluorides, toothbrushes and dentifrices, the 1995 CDA Trade Exhibit is the place for you. Not only can you find these products, services and much more under one roof, you can benefit from the expert advice of those who manufacture and sell what you are looking for.

Ask questions, seek information, compare equipment and products, determine the best value and order what you need without having to look any further.

Visit the Trade Exhibit and save yourself time and money!



A Beautiful Congress Centre and Splendid Hotels

Situated within sight of the Parliament of Canada and at the confluence of the Rideau Canal and the Ottawa River, (a short distance from the National Art Gallery and other renowned museums) the Ottawa Congress Centre offers ideal facilities to house lectures as well as the Trade Exhibit of the 1995 CDA Annual Meeting. In order to accommodate a great number of lectures, the scientific program will also take place at the Westin Hotel and in the historic Château Laurier.

Special hotel rates have been negotiated especially for convention participants. Visitors can choose to stay at the Westin Hotel, the Château Laurier, the Novotel Ottawa Hotel or the Sheraton Ottawa Hotel & Towers (rates and reservation forms will be available shortly in the *Preliminary Program*). Wherever you select to stay, you will receive the same warm hospitality and great service that is the trademark of each of these hotels.



FOR ALL DENTAL PROFESSIONALS — PLAN TO BE THERE!



OTTAWA 1995

Canadian Dental Association Annual Meeting

August 26 - 29 • 26 - 29 août

Réunion annuelle de l'Association dentaire canadienne

Summer Sizzles in Canada's Capital

There's no better time than the climax of summer to take in the sights and sounds of the nation's capital.

Ottawa richly deserves its 'clean, green' reputation.

A stroll downtown is bound to bring you within earshot of an open-air concert in one of the city's many parks.

Spend a day on the farm — right in the centre of town! Visit the livestock showcase herds at the Central Experimental Farm and wander the pastoral paths of the National Arboretum, right next door.

The harvest bounty of the agricultural communities surrounding the capital is just starting to come into Ottawa's historic Byward Market, where a proud tradition of pioneer self-sufficiency blends magically with the cosmopolitan flavour of cappuccino and gelato by day and the heartbeat of Ottawa's hottest clubs by night.

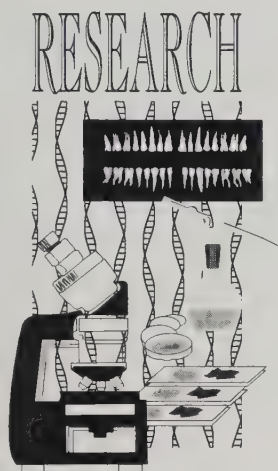


If culture is on your agenda, you'll find something to enthrall you at one of the capital's twelve national museums — from landmarks such as the National Gallery and the Museum of Civilization to lesser-known gems such as the Canadian Museum of Photography and the National Aviation Museum.

Wander down to the water (it's never too far in any direction!) and drink in some history. Walk or cycle the scenic trails that follow the historic Rideau Canal. See Parliament Hill — the seat of power — from the deck of an Ottawa River cruise boat — over a gourmet dinner!

Stroll the grounds of Parliament Hill, with its immaculate gardens in full bloom. Tour the House of Commons and witness the colourful 'Changing the Guard' ceremony.

Once you've been here, you'll agree — you haven't seen summer until you've seen it in the nation's capital!



Effect On Plaque Removal and Gingivitis Of A Triclosan-Copolymer Pre-Brush Rinse: A Six-Month Clinical Study In Canada

Farid Ayad, DDS

Raymond Berta, BS, MBA

ABSTRACT

The effect on plaque removal and gingivitis of using a pre-brush rinse containing 0.03 per cent triclosan (Irgacare MP, Ciba-Geigy Corp.) and 0.125 per cent of a copolymer of polyvinylmethyl ether and maleic acid over a six-month period, versus using a matching placebo pre-brush rinse, was assessed in this clinical study.

Subjects were instructed to rinse their mouths for one minute, twice daily (morning and evening), with 15 mL of their assigned pre-brush rinse. Immediately after rinsing, subjects brushed their teeth for 30 seconds using the dentifrice and toothbrush supplied to them at the outset. Subjects were instructed to refrain from any other oral hygiene procedures throughout the duration of the study. Plaque and gingivitis examinations were conducted after three months and again after six months.

At the conclusion of the study (six months), the triclosan/copolymer pre-brush rinse demonstrated an advantage of 24.8 per cent for plaque removal and a 22.1 per cent reduction in gingivitis, when compared to the matching placebo pre-brush rinse. These advantages in plaque removal and gingivitis reduction were statistically significant.

The six-month effect of the triclosan/copolymer pre-brush rinse was even greater on "the more difficult to brush" surfaces of the teeth, as determined by the use of the Plaque Severity Index and the Gingivitis Severity Index. When the mean Plaque Severity Index (Quigley-Hein Plaque

Index score 3.0) scores of both pre-brush rinse groups were compared, the triclosan/copolymer pre-brush rinse was shown to provide a statistically significant advantage of 54.5 per cent in plaque removal efficacy, as compared to the matching placebo pre-brush rinse. Similarly, the mean Gingivitis Severity Index (Loe-Silness Gingivitis Index score 2.0) scores of those subjects using the triclosan/copolymer pre-brush rinse indicated a statistically significant reduction in gingivitis of 67.0 per cent, as compared to the matching placebo pre-brush rinse.

Clearly, there are significant advantages to be gained in plaque removal efficacy and gingivitis reduction through the twice daily use of a pre-brush rinse containing 0.03 per cent triclosan and 0.125 per cent of a copolymer. These results, as compared to those obtained using a matching placebo pre-brush rinse, were statistically significant at the greater than 99 per cent level of confidence.

SOMMAIRE

Dans cette étude clinique sur l'élimination de la plaque et la réduction de la gingivite, on a évalué, au cours d'une période de six mois, l'efficacité d'un rinçage avant brossage avec une solution contenant 0,03 p. cent de triclosan (Irgacare MP, Ciba-Geigy Corp.) et de 0,125 p. cent de copolymère d'éther polyvinylméthyle et d'acide maléique, tout en faisant une comparaison avec un rince-bouche placebo.

On a demandé aux sujets de se

rincer la bouche deux fois par jour (matin et soir) durant une minute avec 15 ml du rince-bouche qu'on leur a donné, puis immédiatement après, de se brosser les dents trente secondes avec une brosse et un dentifrice qu'on leur a également fournis. De plus, on leur a prescrit de s'abstenir de toute autre mesure d'hygiène bucco-dentaire pendant toute la durée de l'étude. Après trois mois, puis de nouveau après six mois de ce régime, on les a examinés pour connaître l'état de la plaque et de la gingivite dans leurs bouches.

A la fin de l'étude, donc au bout de six mois, le rinçage avant brossage avec la solution triclosan-copolymère avait, comparativement au rinçage avec la solution placebo, procuré un avantage de 24,8 p. cent pour l'élimination de la plaque et de 22,1 p. cent pour la réduction de la gingivite. Statistiquement, il s'agit d'une amélioration significative.

Comme on a pu le déterminer à l'aide des indices de gravité de la plaque et de la gingivite, l'efficacité de la solution triclosan-copolymère après six mois de rinçage s'est révélée encore plus grande aux surfaces des dents qui sont «difficiles à brosser». Lorsqu'on a comparé les moyennes des deux groupes pour l'indice de gravité de la plaque (indice de gravité de la plaque Quigley-Hein 3), celui qui avait utilisé la solution triclosan-copolymère présentait, par rapport au groupe témoin qui avait utilisé le placebo, un avantage statistiquement significatif de 54,5 p. cent pour l'élimination de la plaque. Pareillement, l'indice de gravité de la gingivite pour le premier groupe (in-

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1



dice de gravité Loe-Silness 2) accusait une réduction statistiquement significative de 67,0 p. cent comparé à celui du second groupe.

On peut donc conclure que, deux fois par jour avant le brossage des dents, l'utilisation d'un rinçage-bouche contenant 0,03 p. cent de triclosan et 0,125 p. cent d'un copolymère s'est révélée avantageuse pour éliminer la plaque et réduire la gingivite. Comparées au groupe témoin qui a utilisé un placebo, ces différences sont statistiquement significatives, dépassant de plus de 99 p. cent le seuil de confiance.

Introduction

It is well known that the use of a toothbrush and interproximal cleaning aids (floss, etc.) results in the mechanical removal of plaque from the mouth. The use of an efficacious oral rinse could be expected to improve plaque removal from those tooth surfaces not readily accessible to such mechanical action.

The incorporation of an effective antibacterial ingredient into the oral rinse would be expected to improve its efficacy. Triclosan is a broad spectrum antibacterial agent manufactured by the Ciba-Geigy Corporation under the tradename Irgacare MP. It has been found to be a useful antibacterial agent for incorporation into oral products.¹ Studies have demonstrated that the uptake of triclosan to enamel and buccal epithelial cells is enhanced by the incorporation of a copolymer of polyvinylmethyl ether and maleic acid.² Numerous clinical studies conducted with a dentifrice containing 0.3 per cent triclosan, 2.0 per cent PVM/MA copolymer, and 0.243 per cent sodium fluoride in a silica base have demonstrated the efficacy of triclosan/copolymer in reducing plaque, gingivitis, calculus, and dental caries.³

The effect of a 0.03 per cent triclosan/copolymer pre-brush rinse has been assessed *in vitro*.⁴ The results obtained indicate that the use of the pre-brush rinse was more effective in reducing plaque than a matching placebo pre-brush rinse. Subsequent short-term clinical studies confirmed these *in vitro* findings.⁵⁻⁷

Recently, two independent one-week clinical studies were con-

ducted to assess the effect on plaque removal and plaque prevention of a pre-brush rinse containing 0.03 per cent triclosan (Irgacare MP, Ciba-Geigy Corp.) and 0.125 per cent of a copolymer of polyvinylmethyl ether and maleic acid (Gantrez, ISP Corp.). The results of these two clinical studies once again confirmed the plaque removal and plaque prevention efficacy of a triclosan/copolymer pre-brush rinse, as compared to a matching placebo pre-brush rinse.^{8,9}

A subsequent six-month study was conducted according to the "Guidelines for the Acceptance of Chemotherapeutic Products for the Control of Supragingival Dental Plaque and Gingivitis," as proposed by the Council on Dental Therapeutics of the American Dental Association.¹⁰ The results of this study demonstrated long-term efficacy in plaque removal and gingivitis reduction through the use of a triclosan/copolymer pre-brush rinse, as compared to a matching placebo pre-brush rinse.¹¹

The purpose of this six-month double-blind clinical study was to assess the effect on plaque removal and gingivitis of a pre-brush rinse containing 0.03 per cent triclosan and 0.125 per cent Gantrez copolymer, as compared to a matching placebo pre-brush rinse, over a six-month period.

Materials and Methods

A double-blind, stratified, two-treatment design was used in this study. Healthy adult male and female subjects from Ontario who met specific inclusion/exclusion criteria were enrolled in this clinical study. To qualify for participation, subjects were required to have a mean modified Quigley Hein Plaque Index score of 1.5 or greater and a mean modified Loe-Silness Gingival Index score of 1.0 or greater (baseline plaque and gingivitis index scores). Qualifying subjects were stratified into two balanced treatment groups, according to their baseline plaque and gingivitis index scores.

Plaque was scored according to the Turesky et al¹² modification of the Quigley Hein Plaque Index method. A tooth was divided into

six segments, three facially and three lingually, as follows:

- 1) mesio-facial,
- 2) mid-facial,
- 3) disto-facial,
- 4) mesio-lingual,
- 5) mid-lingual, and
- 6) disto-lingual.

Third molars and those teeth with cervical restorations or prosthetic crowns were excluded from the scoring procedure.

Gingivitis was scored according to the Mandel-Chilton modification of the Loe-Silness Gingival Index.^{13,14} As with the Plaque Index, the tooth was divided into six segments:

- 1) mesio-facial,
- 2) mid-facial,
- 3) disto-facial,
- 4) mesio-lingual,
- 5) mid-lingual, and
- 6) disto-lingual.

Third molars and those teeth with cervical restorations or prosthetic crowns were excluded from the scoring procedure.

In this study, 110 adult male and female subjects who met the entrance criteria were stratified into two balanced groups. The groups were then randomly assigned to use the triclosan/copolymer pre-brush rinse or the matching placebo pre-brush rinse.

The triclosan/copolymer pre-brush rinse contained 0.03 per cent triclosan and 0.125 per cent of a copolymer of polyvinylmethyl ether and maleic acid. Both the placebo and the triclosan/copolymer pre-brush rinses contained 0.025 per cent sodium fluoride. Rinses containing 0.025 per cent sodium fluoride have been approved for anticaries efficacy by the United States Food and Drug Administration (FDA), the American Dental Association (ADA), and the National Institute of Dental Research (NIDR).

The pre-brush rinses were distributed in identical packages and were identical in color and flavor to ensure the double-blind nature of the study. All subjects also received a tube of commercially-available dentifrice containing fluoride and an adult, soft-bristled toothbrush. To ensure that subjects used the mouth rinses properly,

Table I

**Quigley-Hein Plaque Index Scores
Triclosan/Copolymer and Placebo Pre-Brush Rinse Groups**

Examination	Pre-Brush Mouthrinse Group	Number of Subjects			Age		Mean Q-H Scores ($\pm$ Std. dev.)	Per cent Reduction (vs. Placebo)	Stat. Sig.
		Male	Female	Total	Mean	Range			
Baseline	Placebo	19	30	49	35	21 - 57	2.74 $\pm$ 0.42	—	NS
	Triclosan/Copolymer	20	29	49	36	19 - 58	2.76 $\pm$ 0.42	—	
Three Months	Placebo	19	30	49	35	21 - 57	2.50 $\pm$ 0.34	—	SIG $p < 0.001$
	Triclosan/Copolymer	20	29	49	36	19 - 58	1.97 $\pm$ 0.37	-21.2%	
Baseline	Placebo	19	29	48	35	21 - 57	2.75 $\pm$ 0.42	—	NS
	Triclosan/Copolymer	18	29	47	36	19 - 58	2.77 $\pm$ 0.42	—	
Six Months	Placebo	19	29	48	35	21 - 57	2.46 $\pm$ 0.32	—	SIG $p < 0.001$
	Triclosan/Copolymer	18	29	47	36	19 - 58	1.85 $\pm$ 0.28	-24.8%	

they were provided with new supplies at regularly scheduled intervals. At each of these "re-supply" visits, compliance was monitored by visually inspecting the returned bottles of mouth rinse and recording the amount of mouth rinse used since the previous visit.

The subjects were instructed to rinse their mouths for one minute, twice daily (morning and evening), with 15 mL of their assigned pre-brush rinse. Immediately after rinsing, subjects brushed their teeth for 30 seconds with the dentifrice and toothbrush supplied to them. Subjects were instructed to refrain from using any other oral hygiene products and/or procedures (including flossing) throughout the duration of the study. To ensure that the pre-brush rinses could be evaluated under "actual use" rather than "ideal use" conditions, subjects were not given additional instruction in oral hygiene. In addition, no restrictions on diet or smoking were imposed. It was assumed that any variability introduced by these factors would be accounted for by the "balanced" nature of these groups.

Subjects returned to the clinical facility after three months and again after six months for a plaque and gingivitis examination. The same plaque and gingivitis scoring procedures used at baseline were repeated for these examinations and, throughout this study, all ex-

aminations were performed by the same dental examiner (F.A.). Subjects were instructed to perform their final rinsing/brushing procedure at least 12 hours before they returned for their three-month and six-month plaque/gingivitis examination.

This study was conducted according to the "Guidelines for the Acceptance of Chemotherapeutic Products for the Control of Supragingival Dental Plaque and Gingivitis," as proposed by the Council on Dental Therapeutics of the American Dental Association. The data obtained were analyzed using an Analysis of Variance. A difference was declared statistically significant if the p-value of the two-sided test was 0.05 or less.

Results and Discussion

Ninety-eight subjects returned for the three-month examination and 95 completed the entire study (six months). Of those who failed to complete the study, all dropped out for reasons unrelated to the use of the pre-brush rinses. There were no adverse effects observed or reported that could be attributed to the use of the pre-brush rinses.

Comparison Of the Mean Quigley-Hein Plaque Index Scores

The results of this study indicate that the use of triclosan/copolymer pre-brush rinse over a six month

period, as compared to using a matching placebo pre-brush rinse, resulted in a plaque removal efficacy of 24.8 per cent for all tooth surfaces in the mouth (when comparing mean Quigley-Hein Plaque Index scores).

Table I shows the baseline characteristics and mean baseline Quigley-Hein Plaque Index scores for all subjects who returned for the three-month and six-month examinations. It also presents a comparison of the mean Quigley-Hein Plaque Index scores for the two groups (triclosan/copolymer, placebo) after subjects had used their assigned pre-brush rinses for periods of three and six months.

Comparison Of the Mean Plaque Severity Index Scores

In addition to a mean Quigley-Hein Plaque Index score, a mean Plaque Severity Index score was calculated for each subject.³ The Plaque Severity Index was used to assess the plaque removal efficacy in the areas of the mouth most difficult to access with a toothbrush. These areas are considered more "difficult to brush" because they traditionally have higher plaque scores and contain more mature, developed plaque (e.g. posterior and interproximal areas).

The results of this study indicate that the use of the triclosan/copolymer pre-brush rinse over a six month period, as compared to us-



Table II

**Plaque Severity Index Scores
Triclosan/Copolymer and Placebo Pre-Brush Rinse Groups**

Examination	Pre-Brush Mouthrinse Group	Number of Subjects			Age		Mean PS Scores ($\pm$ Std. dev.)	Per cent Reduction (vs. Placebo)	Stat. Sig.
		Male	Female	Total	Mean	Range			
Baseline	Placebo	19	30	49	35	21 - 57	0.569 $\pm$ 0.195	—	NS
	Triclosan/Copolymer	20	29	49	36	19 - 58	0.584 $\pm$ 0.171	—	
Three Months	Placebo	19	30	49	35	21 - 57	0.505 $\pm$ 0.162	—	SIG $p < 0.001$
	Triclosan/Copolymer	20	29	49	36	19 - 58	0.289 $\pm$ 0.160	- 42.8%	
Baseline	Placebo	19	29	48	35	21 - 57	0.575 $\pm$ 0.193	—	NS
	Triclosan/Copolymer	18	29	47	36	19 - 58	0.590 $\pm$ 0.170	—	
Six Months	Placebo	19	29	48	35	21 - 57	0.459 $\pm$ 0.184	—	SIG $p < 0.001$
	Triclosan/Copolymer	18	29	47	36	19 - 58	0.209 $\pm$ 0.139	-54.5%	

ing a matching placebo pre-brush rinse, resulted in plaque removal efficacy of 54.5 per cent for those tooth surfaces in the mouth that are "more difficult to brush" (based on a comparison of mean Plaque Severity Index scores).

Table II shows the baseline characteristics and mean baseline Plaque Severity Index scores for all subjects who returned for the three-month and six-month examination. It also presents a comparison of the mean Plaque Severity Index scores for the two groups (triclosan/copolymer, placebo) after subjects had used their assigned pre-brush rinses for periods of three and six months.

Comparison Of the Mean Modified Loe-Silness Gingival Index Scores

The results of this study indicated that the use of the triclosan/copolymer pre-brush rinse over a six month period, as compared to a matching placebo pre-brush rinse, resulted in a 22.1 per cent reduction in gingivitis in all areas of the mouth (when comparing mean Loe-Silness Gingival Index scores).

Table III shows the baseline characteristics and mean baseline Loe-Silness Gingival Index scores for all subjects who returned for the three-month and six-month examination. It also presents a comparison of the mean Loe-Silness

Gingival Index scores for the two groups (triclosan/copolymer, placebo) after subjects had used their assigned pre-brush rinse for periods of three and six months.

Comparison Of the Mean Gingivitis Severity Index Scores

In addition to calculating a mean Loe-Silness Gingival Index score for each subject, a mean Gingivitis Severity Index score was determined (Volpe³). The Gingivitis Severity Index is used to assess the gingiva of those areas of the tooth that are considered most difficult to access with a toothbrush, which would, therefore, demonstrate the more severe manifestations of gingivitis (i.e. bleeding on probing).

The results of this study indicate that the use of the triclosan/copolymer pre-brush rinse over a six month period, as compared to a matching placebo pre-brush rinse, resulted in a 67.0 per cent reduction in gingivitis in those areas of the mouth that are "more difficult to brush" (based on a comparison of Gingivitis Severity Index scores).

Table IV shows the baseline characteristics and mean baseline Gingivitis Severity Index scores for all subjects who returned for three-month and six-month examinations. It also provides a comparison of the mean Gingival Severity

Index scores for the two groups (triclosan/copolymer, placebo) after subjects had used their assigned pre-brush rinse for periods of three and six months.

Summary and Conclusions

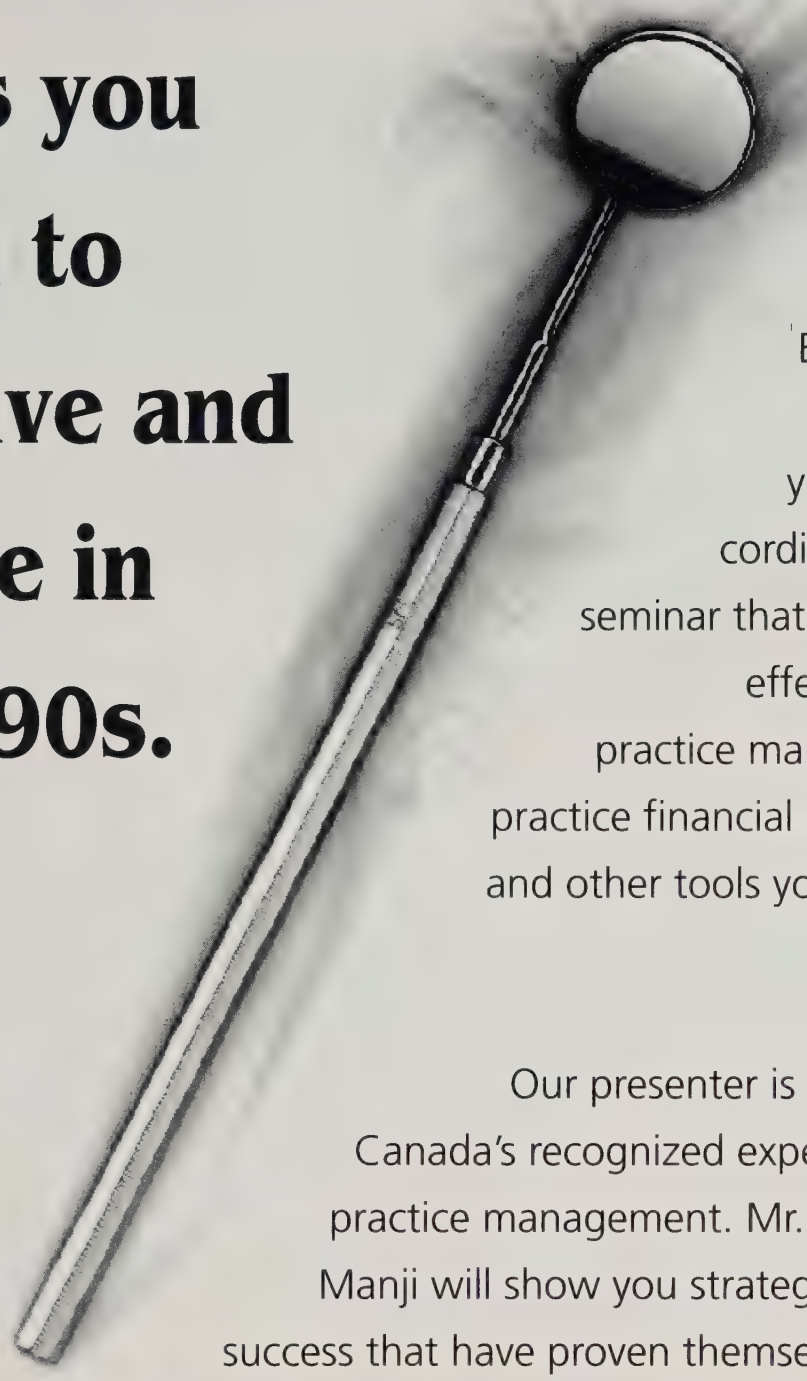
The effect on plaque removal and gingivitis of using a pre-brush rinse containing 0.03 per cent triclosan (Irgacare MP, Ciba-Geigy Corp.) and 0.125 per cent of a copolymer of polyvinylmethyl ether and maleic acid over a six-month period, versus using a matching placebo pre-brush rinse, was assessed in this clinical study.

The results indicate that the use of the triclosan/copolymer pre-brush rinse over a six month period, as compared to a matching placebo pre-brush rinse, resulted in:

- 1 A plaque removal efficacy of 24.8 per cent for all tooth surfaces in the mouth (when comparing mean Quigley-Hein Plaque Index scores).
- 2 A plaque removal efficacy of 54.5 per cent for those tooth surfaces in the mouth that are "more difficult to brush" (when comparing mean Plaque Severity Index scores).
- 3 A 22.1 per cent reduction in gingivitis in all areas of the mouth (when comparing mean Loe-Silness Gingival Index scores).

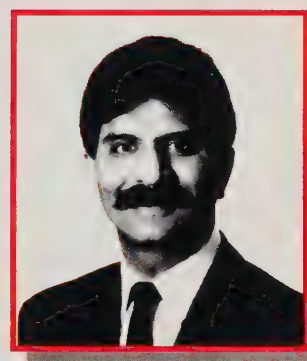
One of the tools you need to survive and thrive in the '90s.

CANADIAN
DENTAL
ASSOCIATION



But there are others and we'd like to tell you about them. You are cordially invited to a one day seminar that's packed with practical, effective tips and advice on practice management, patient care, practice financial planning, team building and other tools you need to survive – and thrive – in the '90s.

Our presenter is one of Canada's recognized experts on practice management. Mr. Imtiaz Manji will show you strategies for success that have proven themselves in hundreds of practices from coast to coast.



Windsor
January 13, 1995

Halifax
February 10, 1995

London
To be announced

Winnipeg
May 5, 1995

Hamilton
March 3, 1995

Saskatoon
To be announced

See next page for more details...



The Canadian Dental Association

One Day Seminar • Limited Enrolment • CE Credits Pending*

Surviving and Thriving in the '90s

Re-engineering your practice and life plan for success!

Strategies for Patient Care

- ✓ Discover how successful practices achieve 90% retention in hygiene.
- ✓ Determine how many hygiene days your practice really needs to meet patient care needs.
- ✓ Turn your patients into in-house marketers. Learn 9 times you can ask for a referral comfortably.
- ✓ Learn how to identify your patients' motivations and sidestep reasons to avoid treatment.
- ✓ Find out what patients want to know to accept ideal treatment & maintain optimum oral health.
- Minimize Downtime

Strategies for Transition Management

- ✓ Discover when and how to integrate an associate into your growing practice.
- ✓ Find out why "equity" associateships are so successful.
- ✓ Untangle practice stagnation and overcome saturation through transition options.
- ✓ Learn how to plan your calendar for the re-engineered practice.
- Maximize Practice Value

Strategies for Practice Financial Planning

- ✓ Learn to control practice expenses.
- ✓ Discover how to anticipate your cashflow and eliminate shortfalls.
- ✓ Find out the vital signs of financially healthy practices.
- ✓ Learn to play "what if's" before making important decisions.
- Eliminate Financial Stress

Strategies for Team Leadership

- ✓ Learn the 6 key factors in practice management that your team must understand.
- ✓ Adjust your team's job roles to increase productivity and maximize patient care.
- ✓ Discover how to set precise and realistic goals for team performance, accountability and incentives.
- ✓ Find out how team meetings and communication are essential in the successful practice.
- ✓ Learn 20 common mistakes dentists make which decrease team performance & increase overhead.
- Build a Highly-Motivated Team

Agenda 8:30: Sign-in • 9:00: Begin • 12:15: Break (lunch included) • 1:15: Resume • 4:00: Close

Pre-registration is required. There will be no on-site registrations. Register early since enrolment is limited.

OFFICE MANAGER/SPOUSE attending with dentist \$80

DENTIST \$160

SUBTOTAL

GST 7% of subtotal (#R106845209)

TOTAL

Number Total

	\$
	\$
	\$
	\$
	\$

Name: _____ CDA Membership #: _____

Street: _____ City/Province: _____

Postal Code: _____ Telephone (Office): _____ Seminar Location: _____

A receipt for the above registration fees will be issued to: _____

☐ Cheque made payable to the Canadian Dental Association enclosed. (No post-dated cheques)

☐ Visa

☐ MasterCard

Signature: _____ Credit Card #: _____

Expiry Date: _____

Mail or fax registration form and payment to:

Canadian Dental Association, Member Services, 1815 Alta Vista Drive, Ottawa, ON, K1G 3Y6

Register today! Call CDA toll-free 1-800-267-6354 or fax 1-613-523-7736.

Confirmation of your enrolment will be received by mail. Cancellation policy: Full refund 21 days prior to seminar.

*CE Credits will apply subject to Provincial approvals pending.

CDA member dentists
receive a \$75 credit towards
the purchase of
Taking Care of Business
Volumes 1, 2 & 3

Table III

**Loe-Silness Gingival Index Scores
Triclosan/Copolymer and Placebo Pre-Brush Rinse Groups**

Examination	Pre-Brush Mouthrinse Group	Number of Subjects			Age		Mean L-S Scores ($\pm$ Std. dev.)	Per cent Reduction (vs. Placebo)	Stat. Sig.
		Male	Female	Total	Mean	Range			
Baseline	Placebo	19	30	49	35	21 - 57	1.66 $\pm$ 0.28	—	NS
	Triclosan/Copolymer	20	29	49	36	19 - 58	1.66 $\pm$ 0.29	—	
Three Months	Placebo	19	30	49	35	21 - 57	1.49 $\pm$ 0.13	—	SIG $p < 0.001$
	Triclosan/Copolymer	20	29	49	36	19 - 58	1.18 $\pm$ 0.08	-20.8%	
Baseline	Placebo	19	29	48	35	21 - 57	1.66 $\pm$ 0.28	—	NS
	Triclosan/Copolymer	18	29	47	36	19 - 58	1.67 $\pm$ 0.29	—	
Six Months	Placebo	19	29	48	35	21 - 57	1.49 $\pm$ 0.13	—	SIG $p < 0.001$
	Triclosan/Copolymer	18	29	47	36	19 - 58	1.16 $\pm$ 0.07	-22.1%	

Table IV

**Gingivitis Severity Index Scores
Triclosan/Copolymer and Placebo Pre-Brush Rinse Groups**

Examination	Pre-Brush Mouthrinse Group	Number of Subjects			Age		Mean GS Scores ($\pm$ Std. dev.)	Per cent Reduction (vs. Placebo)	Stat. Sig.
		Male	Female	Total	Mean	Range			
Baseline	Placebo	19	30	49	35	21 - 57	0.584 $\pm$ 0.161	—	NS
	Triclosan/Copolymer	20	29	49	36	19 - 58	0.597 $\pm$ 0.181	—	
Three Months	Placebo	19	30	49	35	21 - 57	0.491 $\pm$ 0.131	—	SIG $p < 0.001$
	Triclosan/Copolymer	20	29	49	36	19 - 58	0.184 $\pm$ 0.076	-62.5%	
Baseline	Placebo	19	29	48	35	21 - 57	0.582 $\pm$ 0.162	—	NS
	Triclosan/Copolymer	18	29	47	36	19 - 58	0.601 $\pm$ 0.180	—	
Six Months	Placebo	19	29	48	35	21 - 57	0.494 $\pm$ 0.138	—	SIG $p < 0.001$
	Triclosan/Copolymer	18	29	47	36	19 - 58	0.163 $\pm$ 0.073	-67.0%	

4 A 67.0 per cent reduction in gingivitis in those areas of the mouth that are "more difficult to brush" (when comparing Gingivitis Severity Index scores).

The triclosan/copolymer pre-brush rinse provided a plaque removal effect of at least 12 hours duration, as a minimum of 12 hours elapsed between each subject's final rinsing/brushing procedure of the day and the actual conduct of the three-month and six-month plaque/gingivitis examination.

Based on the findings of this study, it can be concluded that ad-

vantages in plaque removal efficacy and gingivitis reduction can be achieved through the twice daily use of a pre-brush rinse containing 0.03 per cent triclosan and 0.125 per cent of a copolymer. These advantages, as compared to the results obtained using a matching placebo pre-brush rinse, were statistically significant, at the greater than 99 per cent level of confidence.

Therefore, the use of a pre-brush rinse containing 0.03 per cent triclosan/0.125 per cent copolymer appears to promote improved oral hygiene. ■

Dr. Ayad is director of dental studies, Applied Consumer and Clinical Evaluations Inc., Mississauga, Ont.

Raymond Berta is president, Applied Consumer and Clinical Evaluations Inc., Mississauga, Ont.

Reprint requests to: Dr. F. Ayad, Applied Consumer and Clinical Evaluations Inc., 2457 Dunwin Drive, Mississauga, Ont. L5L 1T1.

References

1. Lindhe, J. Triclosan/copolymer/fluoride dentifrices: A new technology for the prevention of plaque, calculus, gingivitis and caries. *Am J Dent* 3:53-54, 1990.

What does a phone call to the CDA Library get you?



A whole world of information!!!!

Medline Computer Searches • Reference Services
Information Packages • Videos • Books and more.

Call: 1-800-267-6354 ext.223



CANADIAN
DENTAL
ASSOCIATION

2. Nabi, N. et al. In vitro and in vivo studies on triclosan/PVM/MA copolymer NaF combination as an anti-plaque agent. *Am J Dent* 3:S7-S14, 1989.
3. Volpe, A. et al. A review of plaque, gingivitis, calculus and caries clinical efficacy with a dentifrice containing triclosan and PVM/MA copolymer. *J Clin Dent* 4:31-41, 1993.
4. Williams, M. et al. In vitro antiplaque effects of a triclosan/copolymer mouthrinse. *Am J Dent* 3:S53-S56, 1990.
5. Abello, R. et al. Effect of a mouthrinse containing triclosan and a copolymer on plaque formation in the absence of oral hygiene. *Am J Dent* 3:S57-S61, 1990.
6. Singh, S. et al. Effect of a mouthrinse containing triclosan and a copolymer on plaque formation in a normal oral hygiene regimen. *Am J Dent* 3:S63-S65, 1990.
7. Rustogi, K. et al. Clinical study of a pre-brush rinse and a triclosan/copolymer mouthrinse: Effect on plaque formation. *Am J Dent* 3:S67-S69, 1990.
8. Deasy, M. et al. Antiplaque efficacy of a triclosan/copolymer pre-brush rinse: A plaque prevention clinical study. *Am J Dent* 5:91-94, 1992.
9. Lobene, R. et al. Clinical efficacy of a triclosan/copolymer pre-brush rinse: A plaque removal clinical study. *J Clin Dent* 3(2):53-58 1992.
10. Council on Dental Therapeutics, American Dental Association. Guidelines for the acceptance of chemotherapeutic products for the control of plaque and gingivitis. *JADA* 112:529-532, 1986.
11. Worthington, H. et al. A six month clinical study of the effect of a pre-brush rinse on plaque removal and gingivitis. *Brit Dent J* In press, 1993.
12. Turesky, S. et al. Reduced plaque formation by the chloromethyl analogue of vitamin C. *J Periodontol* 41:41-43, 1970.
13. Loe, H. and Silness, J. Periodontal disease in pregnancy. *Acta Odont Scand* 21:533-537, 1963.
14. Talbott, K., Mandel, I. and Chilton, N. Reduction of baseline gingivitis scores in repeated prophylaxis. *J Prev Dent* 4:28-29, 1977.



Dentistry Canada Fund Program Guide DCF programs, eligibility requirements and deadlines.



DCF Teaching/Research Fellowships



Any Canadian citizen or permanent resident who has completed an undergraduate course in dentistry, a dental hygiene program, or a program in science.
Deadline: March 1

DCF Grants



Any projects relevant to dentistry that do not fit elsewhere; individuals and associations may apply.
Deadline: ongoing, subject to fund availability.

DCF Undergraduate Students' Grants



All Canadian faculties of dentistry.
Deadline: annual, no specific deadline

DCF Unrestricted Grants



All Canadian faculties of dentistry.
Deadline: annual, no specific deadline

DCF Grants for Needy Students



Any undergraduate student currently enrolled in a Canadian faculty of dentistry.
Deadline: March 1

DCF Dental Technology Scholarships



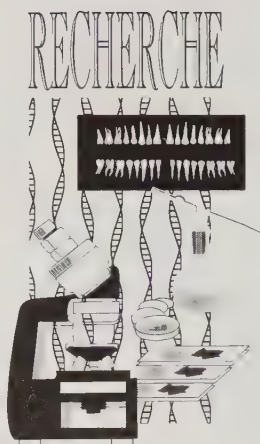
First-year student of dental technology at the Nova Scotia Community College.
Deadline: March 1

DCF Biennial Research Award (1994, '96, etc.)



Graduate or post-graduate students in association with a Canadian faculty of dentistry.
Deadline: December 1

For more information contact Jim Wegg, Dentistry Canada Fund manager.
Tel.: (613) 731-0493, or fax: (613) 523-7489.



L'angio-oedème héréditaire : Une condition médicale à implication dentaire

Edouard Cree, BA, DDS, FIAMS

Benoît Laramée, MD, FRCP(C)

Eric Lessard, DMD

Montréal, Qué.

L'angio-oedème héréditaire est une condition peu connue et peu fréquente mais qui, chez les sujets atteints, peut être fatale. D'où l'importance pour le dentiste d'être averti de l'existence de cette maladie de sorte que lorsque le patient se présente et lui dit qu'il est affligé d'angio-oedème héréditaire, ce patient puisse être adéquatement préparé pour une intervention dentaire ou chirurgicale. Le haut intérêt de cet article va de soi en regard des conséquences néfastes de cette condition.

Dans cette présentation, une description de la maladie, des directives quant au diagnostic ainsi que du traitement sera exposée, afin de sensibiliser les intervenants du milieu de la médecine dentaire.

Manifestations cliniques

L'angio-oedème héréditaire (AH)¹⁻⁴ est un désordre autosomal dominant qui se caractérise par un oedème subépithélial récurrent et bien circonscrit. Chez la plupart des patients, l'épisode initial se produit autour de la puberté. Rares sont les patients qui ont eu leur premier épisode vers l'âge de 50 à 70 ans ou avant la puberté. Toutes les parties du corps, incluant la bouche et le complexe maxillo-facial, peuvent être impliquées, mais l'AH affecte surtout les extrémités. Habituellement, il n'y a pas de prurit ou de douleur, sauf celle occasionnée par la distension des tissus par l'action de l'oedème.

L'oedème cutané est très bien circonscrit et il n'y a pas d'urticaire.

On peut retrouver également une implication viscérale dans une grande proportion des cas, c'est-à-dire coliques généralement sévères, douleurs abdominales suivies de diarrhées qui arrivent habituellement tard dans la crise. Ce phénomène peut amener une perte significative de liquide.

On observe toutefois une absence de fièvre et de leucocytose, sauf s'il y a infection surajoutée.

Même si les crises sont auto-limitées, les épisodes sévères sont difficiles à distinguer des conditions abdominales aiguës et plusieurs patients atteints d'AH ont subi des laparotomies exploratrices non nécessaires avec les conséquences de mortalité et morbidité associées à ces interventions.

Un taux de mortalité associée à l'AH est dû à la prédisposition, chez certains patients, à l'obstruction respiratoire suite à l'oedème laryngé,^{3,4} la mort par asphyxie est un danger sérieux, particulièrement chez les patients dont la maladie n'a pas été diagnostiquée : mais avec les thérapies pratiquées aujourd'hui, la mortalité a beaucoup diminué.

Le système nerveux central peut également être impliqué avec des maux de tête sévères, de l'aphasie, hémiplégie et des convulsions pouvant être dues à un oedème cérébral localisé.

La fréquence et la localisation des crises varient beaucoup, certains en ont toutes les semaines alors que d'autres n'en ont que

rarement. D'après une étude de Frank et al, sur 30 patients, 79 p. cent avait un angio-oedème impliquant les extrémités, la face et l'oropharynx alors que 21 p. cent n'avait que des crises gastro-intestinales.

L'angio-oedème classique dure de trois à quatre jours. On observe une montée des symptômes et une installation de ceux-ci au cours des deux premiers jours alors qu'on observe une diminution et une résolution des symptômes durant les deux derniers jours. Il prend de 6 à 24 heures à se former et se résorbe habituellement en 10 ou 12 heures. Dans plus de la moitié des cas rapportés, les événements précipitants sont les manipulations dentaires, une maladie concomitante, une amygdalectomie et un traumatisme accidentel. Le traumatisme semble être le facteur causal le plus courant et l'écrasement tissulaire amènerait les réactions les plus fortes. L'oedème le plus marqué se produit au site du traumatisme, particulièrement lorsque le patient subit une intervention chirurgicale, surtout dans les régions tête et cou incluant les extractions dentaires. Il est donc d'autant plus important, comme dentiste, d'être au courant de l'existence de cette maladie.

Les menstruations et les grossesses semblent avoir un grand rôle à jouer dans l'AH comme agent modulateur. Les contraceptifs oraux augmentent l'intensité et la fréquence des crises.

Déficience en C1EI acquise

Il a été démontré qu'une déficience au C1EI peut être acquise et l'apparition des premiers symptômes arrivent après la quatrième décennie de la vie. La majorité des cas sont associés avec la présence d'un désordre lymphoprolifératif malin ou bénin des lymphocytes B.

On aurait observé également des anticorps contre le C1EI chez certains patients. Il est tentant d'admettre que ce désordre pourrait précéder de plusieurs années une maladie lymphoproliférative maligne ou bénigne.

Considération diagnostique

Un diagnostic précoce est très important. On soupçonne la maladie s'il y a une histoire familiale, histoire de crises d'oedème suite à un traumatisme, absence d'urticaire et prurit.

Des niveaux bas de C^4 sont retrouvés dans 80 à 85 p. cent des patients avec l'AH. Il est recommandé de mesurer le niveau de C^4 pour test de tamisage. Le test doit être confirmé avec un dosage du C1EI.

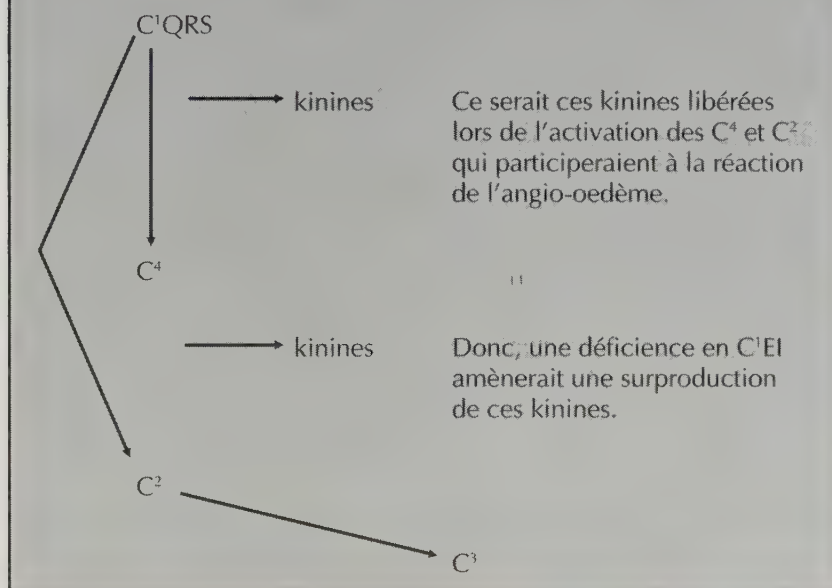
Dans la forme acquise, on observe un niveau de C^1 bas avec des niveaux de C^2 , C^4 et de C1EI également bas. Les niveaux de C^1 sont 10 p. cent de la normale, alors que le niveau de C^1 dans l'AH est légèrement diminué. Cependant, le C^1 et le C^2 ne se dosent habituellement pas dans les hôpitaux.

Traitement et prophylaxie

L'oedème oropharyngé peut devenir si envahissant qu'il faille procéder à une trachéotomie.

Des infusions de plasma frais congelé ont été suggérées dans les cas de crises d'AH. Cependant, l'utilisation de plasma frais comporte un risque d'infection, de réactions anaphylactoides, d'alloimmunisation et de volume intravasculaire excessif. De nos jours, la meilleure thérapie consiste en l'administration de concentrés de C1EI. Dans les cas graves, 500-1000 U sont administrées et l'oedème muqueux commence à disparaître de 30 à 120 minutes plus tard. Une rémission complète se produit en dedans de 25 heures. L'effet clinique dure de trois à cinq jours selon le niveau plasmatique et de la dose. Le concentré de C1EI peut être donné en prophylaxie (prévention).

Physiopathologie



En cabinet dentaire, si le patient présente une enflure importante avec dysphagie, dyspnée et oedème sans prurit suite à une intervention impliquant un traumatisme, envoyer le patient à l'urgence pour traitement, c'est-à-dire l'administration de concentré en C1EI. (Le C1EI concentré n'est pas disponible partout et reste un produit expérimental au Canada.)

Traitement à long terme

Lorsqu'il y a une histoire de:

- 1 oedème facial et cervical,
- 2 crises incapacitantes,
- 3 obstruction laryngée

La prévention s'avère très importante également en évitant les facteurs susceptibles de provoquer une crise.

Il y a des médicaments androgéniques tels que Danazol (Dovocrine) et Stranazolol (Winstol) qui sont réputés très efficaces avec un minimum d'effets secondaires. Cependant le Stranazolol a moins d'effet masculinisant et coûte beaucoup moins cher que le Danazol. Ces médicaments ne devraient pas être prescrits pendant la grossesse^{1,3} ni aux enfants en croissance.¹ Les femmes enceintes devraient recevoir des concentrés de C1EI. Il est à noter que les dérivés androgéniques augmentent l'activité en C1EI de 4-5 fois.²

Il semblerait que ces médicaments ne pourraient être utilisés lorsque l'oedème est déjà commencé.²

Dans les cas de crises aiguës, on suggère une infusion de 36,000 U de concentrés en C1EI.¹

La maladie est exacerbée par les patientes qui prennent des contraceptifs, donc simplement les arrêter.

Préparation

Prophylaxie à court terme

Indication pour : procédures traumatiques (surtout tête et cou).

Donc les procédures dentaires et chirurgicales sont une indication de préparation pour les patients atteints d'AH.

On rappelle l'administration du C1EI en prophylaxie avant un traitement chirurgical.

Donc: Danazol 600mg/jour — 5 jours pré-op. et peut aller jusqu'à 8 à 10 jours.

Stranazolol 4,0 mg q.i.d.

Infusion 2,0 U de plasma frais le jour avant et 2,0 U juste avant la procédure. Danger de transmission des virus : Hépatite B, Sida.

Traitement forme aiguë:

Administration de concentrés en C1EI.

Conclusion

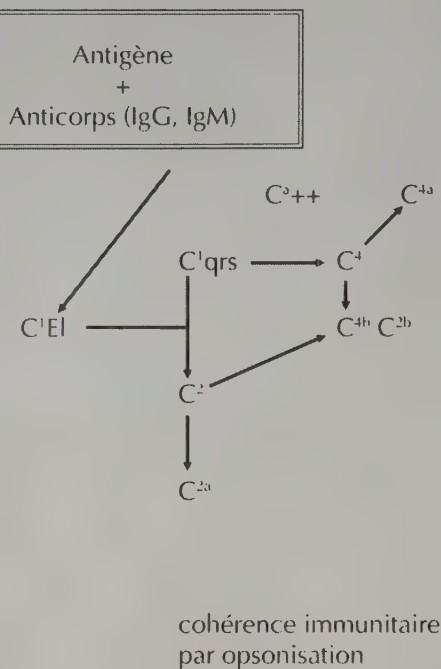
L'angio-oedème héréditaire est une condition rare qui mérite cependant d'être soulignée à cause de son potentiel dangereux et pouvant mener à la mort si non traitée.

Il ne faut quand même pas s'alarmer puisque le patient peut



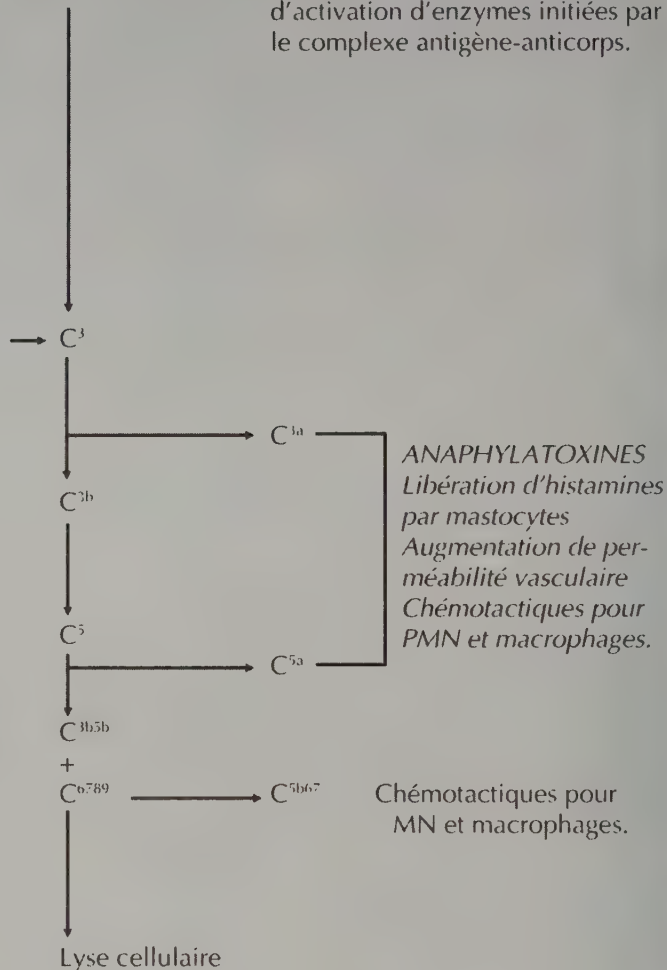
Physiologie du complément

Voie classique



Voie alterne

Il s'agit d'une séquence successive d'activation d'enzymes initiées par le complexe antigène-anticorps.



LÉGENDE

C_{4a}
 C_{2a}
 C_{3a-b}
 C_{5a}

→ sous-produit d'activation ayant activité biologique

PMN = polymorphonucléaire (type de globule blanc)
 C1EI = "C1 esterase inhibition"

subir n'importe quelle intervention chirurgicale s'il est adéquatement préparé. Donc, il est de mise de consulter l'allergiste du patient pour qu'il puisse le préparer selon l'intervention que le dentiste a à effectuer. ■

Le D^r Edouard Cree est chef du service de chirurgie buccale et maxillofaciale, département de stomatologie, Hôpital Notre-Dame, à Montréal.

Le D^r Benoit Laramée est allergiste-im-

munologiste clinique, département d'allergie, Hôpital Notre-Dame.

Le D^r Éric Lessard est résident, département de stomatologie, Hôpital Notre-Dame.

Demandes de tirés à part : Le D^r Edouard Cree, Département de Stomatologie, Hôpital Notre-Dame, 1560 rue Sherbrooke est, Montréal, Qué. H2L 4K8.

Références

1. Agostoni, Angelo et al. Treatment of

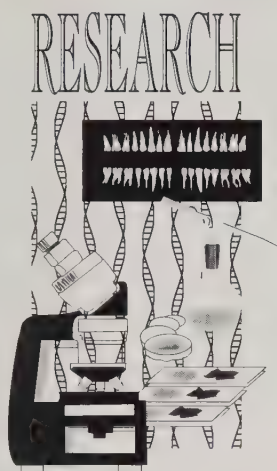
acute attacks of hereditary angio-oedema with C1-inhibits concentrate. *Ann Allergy*, 44:299-301, 1980.

2. Bergamachini, L. et al. C1 INH concentrate in the therapy of hereditary angio-oedema. *Allergy* 38:81-84, 1983.

3. Howard, Barbara J. *Clinical and Pathogenic Microbiology*. Mosby Co., St-Louis, p. 15, 1987.

4. Sim, Tommy C. et al. Hereditary Angio-oedema: Its diagnostic and management perspectives. *Am J Med* 88(6):656-664, 1990.

5. Ward-Booth, R.D. Hereditary angio-oedema. *Br Dent J* (4):211-213, 1979.



A Pilot Smoking Cessation Program Involving Dental Offices in the Borough of East York, Ontario: An Initial Evaluation

John O'Keefe, M.Dent.Sc., MBA

Anne Lessio, B.Sc.

Beverly Kassirer, RDH, B.Sc.D.

Toronto, Ont.

ABSTRACT

A Change Of Heart (ACOH) — a heart-health promotion project based in the Toronto borough of East York — devised a tobacco-cessation counselling program for use in dental offices. This protocol was implemented on a pilot basis in dental offices in East York during 1993. Four practices (seven dentists) agreed to incorporate the program into their office routine. The initial evaluation of the program was carried out in a telephone survey one month later.

After one month, none of the dentists had incorporated the program into their office routine, citing lack of time, fear of alienating patients and a preference for their own protocol. All respondents indicated they were happy with the contents of the program and expressed a desire for further education about tobacco-cessation counselling.

If dentists are to become more involved in tobacco-cessation counselling, it must be perceived by the profession and the public to be a legitimate activity for dentists. To this end, organized dentistry must actively promote continuing education activities related to cessation counselling, incorporate tobacco-cessation counselling into the undergraduate dental curriculum, and collaborate with other interested agencies to raise the public

awareness of tobacco as an oral health issue.

SOMMAIRE

Dans la municipalité de East York, en Ontario, on a conçu, dans le cadre d'un projet visant à promouvoir la santé du coeur et appelé «A Change of Heart» (un coeur nouveau), un programme à l'intention des professionnels dentaires en vue d'inciter les gens à cesser de fumer. Le protocole a été mis en vigueur en 1993. Quatre cabinets (sept dentistes) ont accepté d'incorporer le programme dans leur travail quotidien. Un mois plus tard, on a fait une première évaluation du programme à l'aide d'un sondage téléphonique.

Après un mois, aucun dentiste n'avait incorporé le programme à son travail quotidien, évoquant comme raison le manque de temps, la crainte d'indisposer des patients et une préférence pour son propre protocole. Tous les répondants ont reconnu qu'ils étaient contents du contenu du programme et exprimé le désir d'en apprendre davantage sur les mesures à prendre pour lutter contre le tabagisme.

Pour que les dentistes participent plus à des initiatives de ce genre, il faudrait que la profession et le public considèrent qu'il est légitime pour les dentistes de faire cette lutte. Pour y arriver, l'organ-

isation de la dentisterie devrait s'employer à : promouvoir à ce sujet des programmes d'éducation permanente à l'intention des dentistes; ajouter au programme de formation du 1^{er} cycle en dentisterie un cours contre le tabagisme; collaborer avec d'autres groupes concernés pour que le public prenne davantage conscience du fait que le tabagisme est une question de santé bucco-dentaire.

Introduction

Tobacco use is described as the greatest single preventable cause of premature death in society and the most important public health issue of our time.¹ Smoking related illnesses and premature deaths are mainly associated with coronary heart disease, cancer and other respiratory and circulatory diseases.² The effects of tobacco use on oral health are also well documented. Smoking and the use of smokeless tobacco products are implicated in conditions such as oral cancer, leukoplakia, delayed wound healing and periodontal disease.³⁻⁵

The health benefits of smoking cessation were documented in a 1990 U.S. Surgeon General's report entitled *The Health Benefits of Smoking Cessation*. Particularly, this report indicated that stopping smoking reduced the risk of lung and other cancers, heart attack and

JOURNAL

January/
Janvier
1995
Vol. 61
No. 1



stroke, diseases of the respiratory system, and chronic lung disease. The report also stated that men and women of all ages experience major and immediate health benefits when they quit smoking. Furthermore, if a former smoker remains smoke-free for 15 years, his or her risk of acquiring a smoking related disease is similar to that of a person who has never smoked.⁶

Dentists can play a key role in tobacco cessation counselling. As experts in matters of oral health, they are already experienced in health promotion counselling, and are in regular contact with a large portion of the public.⁷⁻⁹ The National Cancer Institute (NCI) in the United States recently collaborated with various dental and other organizations to produce and implement a tobacco-use cessation program for the oral health team entitled *How To Help Your Patients Quit Smoking*.¹⁰

We are not aware that any such initiative has been reported in Canadian dental literature to date. This article describes and reports on the planning, implementation and initial evaluation of a pilot tobacco-use cessation project involving the dental team that was carried out by A Change Of Heart (ACOH) in 1992/94 in the Toronto borough of East York.

A Change Of Heart (ACOH)

ACOH is an East York community-based heart-health project, funded by the Health Promotion Branch of the Ontario Ministry of Health until 1995. ACOH is mandated to work with the community of East York to promote heart-healthy lifestyle choices: being tobacco free; being physically active; and eating a healthy diet.

In 1992, as part of the tobacco-use control strategy, ACOH became interested in dentists as health professionals who could become smoking cessation counsellors.

Getting Rid Of an Old Flame

Getting Rid of an Old Flame, ACOH's smoking cessation program,¹¹ is a modification of the American NCI program, and the

Canadian Council on Smoking and Health Physicians' Program.¹²

The program is based on the 3A approach to counselling. The first step is to ASK every patient if they smoke. Detailed questions specific to tobacco use can be incorporated into the medical history questionnaire and asked during each recall visit.

If a person smokes, the second step is to ADVISE them to quit. It is often sufficient to make a simple statement like: "As your dentist, I am concerned about your health and advise you to consider stopping smoking." At this stage the patient can be shown the effects of tobacco use on his or her mouth. This short conversation is the most crucial step in the entire program. The quit rate achieved by simply advising a patient to stop is five to 14 per cent. This is two to three times greater than the spontaneous quit rate.¹³ At this point, the oral health professional can assess whether or not the patient is ready to quit.

If the patient is ready to quit, the third and final step is to ASSIST this individual in his or her effort to stop smoking. The oral health care professional may do this by providing self-help materials, giving some tips about how to quit, and/or suggesting nicotine replacement therapy (e.g. nicotine patch).

The majority of dental patients (75 per cent) are non-smokers who will be screened out of the program with the first question. Of the remaining 25 per cent, only about three-quarters will be interested in quitting. This group of patients will initially require only two to three minutes of the dentist's time — discussion about cessation techniques can occur during the course of other treatment.¹⁴

Getting Rid of an Old Flame recommends that the dentist involve the dental hygienist, assistant and receptionist in counselling to maximize the impact of the program. With this approach, the patient will receive reinforcing messages from the entire staff. Research has shown that the more often an individual receives smoking cessation messages from health professionals, the more

likely he or she is to act on those messages.¹⁵ (It should also be noted that a tobacco-free dental office is necessary to support this program.)

Promotion Of the Program

Getting Rid of an Old Flame was promoted through a number of channels including presentations, publications and displays. ACOH members presented the program at meetings of the local dental society — which subsequently endorsed the program — and articles highlighting the effects of smoking on oral health were published in local and provincial dental journals and newsletters, as well as in the University of Toronto's faculty of dentistry journals. A table display was also presented at the Toronto Academy of Dentistry's winter clinic.

All 30 of the dentists practising in East York were invited by letter to obtain a complimentary resource package that explained how to implement the program. The package included an implementation manual and an initial stock of self-help pamphlets and patient quit-kits. Four dental practices (seven dentists in total) requested the resource package. One month later a telephone interview was conducted to evaluate their initial experience with the program.

Results

The evaluation questionnaire investigated four areas: the dentists' overall response to the program; facilitating factors and/or barriers to implementing the program; reactions to the resource materials; and interest in receiving continuing education about tobacco-cessation counselling. Three of the four dental practices involved solo practitioners and the other had four dentists. The contact people for the telephone interviews were three dentists and one office manager.

Although dental personnel reported that they were happy to receive the resource package, none of the practitioners were using *Getting Rid of an Old Flame* at the time of the follow-up call. Two of the solo practitioners indicated that they already counselled pa-

tients informally about smoking cessation and were continuing with their own protocol, while the other solo practitioner received a negative reaction from a patient when he introduced the program and consequently stopped using it. The contact from the group practice indicated that there had not yet been time to implement the program.

All practitioners indicated that there was sufficient information provided in the resource package. They reported that their preferred method of communicating the information was to provide self-help pamphlets in the reception area and to display posters in the office. They also identified several barriers to implementing the program, including the lack of time and staff training, and a fear of patient alienation. The majority of dentists seemed hesitant to become involved in actively counselling patients about smoking cessation. All practitioners indicated interest in attending an evening or half-day seminar about the program.

Discussion

Given that the number of dentists practising in East York is small and the initial interest in the program was limited, the sample size is admittedly small. Despite this, our findings are consistent with the existing literature about dentists' perceived barriers to smoking cessation counselling.⁷ The barriers cited in the literature include fear of alienating patients, lack of payment for the service, perception of inadequate counselling skills, lack of belief in the effectiveness of smoking cessation counselling, and the perception that the public doesn't consider tobacco-cessation counselling to fall within the realm of legitimate activity for a dentist.

Proactive leadership from organized dentistry in Canada could be very influential in creating a climate in which dentists are seen as legitimate tobacco-cessation counsellors. This can be achieved by:

- providing continuing-education seminars or workshops on tobacco-cessation counselling skills,

- incorporating tobacco-cessation counselling and other health promotion activities into the dental school curriculum, and
- collaborating with other health organizations/agencies interested in tobacco cessation to sensitize the general public to the dentist's legitimate role in tobacco-cessation counselling.

The mandate of ACOH specifically limits its actions to East York, thus *Getting Rid of an Old Flame* can only serve as a pilot project. However, despite the limited success of this program, we are still convinced that dentists have a very important role to play in the fight against tobacco. Our experience indicates that a proper environment must be created in Canada where individual dentists are confident about their tobacco-cessation counselling skills and where the public recognizes this as a legitimate role for dental professionals.

Currently, dentists are aware of the systemic and oral health hazards of tobacco use, but find it difficult to offer advice to patients within a formal office protocol. In the future, we expect that dentists will recognize the practice-building potential of health promotion skills such as tobacco-cessation counselling. As the dental marketplace becomes increasingly competitive, a dental practitioner's ability to offer a range of health promotion counselling options will only serve to enhance the image of his or her practice. ■

John O'Keefe is community dental health specialist with the Metro Toronto Teaching Health Units, and assistant professor in the department of community dentistry, University of Toronto.

Anne Lessio is a health educator with A Change of Heart, a heart-health promotion program based in East York, Ontario, and is currently pursuing an MBA at York University.

Beverly Kassirer is a registered dental hygienist, and has recently completed the B.Sc.D. program at the University of Toronto.

Reprint requests to: Dr. John O'Keefe, Department of Community Dentistry, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ont. M5G 1G6.

References

1. U.S. Department of Health and Human Services. *The health consequences of smoking: cancer*. A report of the Surgeon General. Rockville, Maryland: U.S. Department of Health and Human Services; 1982.
2. Fielding, J.E. Smoking: Health effects and control. In: Last, J.M. (ed.) *Maxcy-Rosenau Public Health and Preventive Medicine* (12th edition), pp. 999-1038, Norwalk, Appleton-Century-Crofts, 1986.
3. McCann, D. Tobacco use and oral health. *JADA* 118(1):19-25, 1989.
4. Locker, D. Smoking and oral health in older adults. *Can J Pub Health* 83:429-432, 1992.
5. Jette, A.M., Feldman, H.A. and Tennstedt, S.L. Tobacco use: a modifiable risk factor for dental disease among the elderly. *Amer J Pub Health* 83(9):1271-1276, 1993.
6. U.S. Department of Health and Human Services. *The health benefits of smoking cessation*. A report of the Surgeon General. Rockville, Maryland. U.S. Department of Health and Human Services, 1990.
7. Gerbert, B., Coates, T., Zahnd, E. et al.. Dentists as smoking cessation counselors. *JADA* 118(1):29-32, 1989.
8. Christen, A.G. and Glover, E.D. Tobacco education with quit smoking programs in the dental office and community: the why's and wherefore's. *Oral Health* 75(2):83-88, 1985.
9. Cohen, S.J., Stookey, G.K., Katz, B.P. et al. Helping smokers quit: a randomized control trial with private practice dentists. *JADA* 118(1):41-45, 1989.
10. Mecklenberg, R.E., Christen, A.G., Gerbert, B. et al. How to help your patients quit smoking: *A National Cancer Institute manual for the oral health team*. Rockville, Maryland, U.S. Department of Health and Human Services, 1990.
11. Kassirer, B. and Lessio, A. Initiating a smoking intervention program: how dentists can help. *Ont Dent* 70 (8):22-27, 1993.
12. The Canadian Council on Smoking and Health. *Guide your client to a smoke free future: a physician counselling cessation program*. Ottawa, Canadian Council on Smoking and Health, 1992.
13. Little, S.J. and Stevens, V.J. Dental hygienists role in reducing tobacco use: a literature review and recommendations for action. *J Dent Hygiene* 65:346-350, 1991.
14. Christen, A.G., McDonald, J.L., Klein, J.A. et al. How-to-do-it quit-smoking strategies for the dental office team: an eight-step program. *JADA* 120(1):20S-27S, 1990.
15. Kottke, T.E., Buttista, R.N., DeFries, G.H. et al. Attributes of successful cessation intervention in medical practice: a meta-analysis of 39 controlled trials. *JAMA* 259:2882-2889, 1988.



CDA Access Ads

CDA ACCESS ADS offer guaranteed access to Canada's largest audience of dentists. To place your ad, call **Neil McGillivray** toll-free across the country at **(800) 661-5004**. In the Toronto calling area, please dial **(905) 278-6700**.

Replying to a CDA Access Box Number? Simply write to:
CDA Access Box ____,
1382 Hurontario St.,
Mississauga, Ont. L5G 3H4.
Or you may fax your reply to (905) 278-4850, noting the appropriate box number.

Offices & Practices

BRITISH COLUMBIA - Nanaimo: Exceptional opportunity/location for sale - First-class dental office in busy major shopping centre, five operatories, high new patient flow, great history and even better future expected. Located in Nanaimo, B.C., one of the fastest growing cities in Canada, with a great recreational environment on the ocean. Call (604) 756-1200 day or (604) 756-1082 evenings. (04/02)

BRITISH COLUMBIA - Trail: Established family practice in stable industrial economy with superb recreational opportunities. Prime location. Low overhead. Modern equipment. Owner retiring. Phone (604) 362-9426 (evenings). (06/13)

BRITISH COLUMBIA - Vancouver Island: Well established practice for sale. Excellent location, very busy, California of Canada. Please reply to CDA ACCESS Box # 2655. (01/02)

VANCOUVER - B.C.

For sale general/family dental practice. Broadway & Commercial Skytrain station. Five operatories, over 1,500 active charts, strong flow of new patients. Owner moving overseas. Gross \$500,000, four-day week.

Please reply to
CDA ACCESS Box # 2651. (11/01)

BRITISH COLUMBIA - Lower Mainland: Pacific flyway for sale.

Profitable, well-established, health-centered, non-traditional general practice opportunity with crown and bridge emphasis. Here the famous visitors are snow geese travelling between the Arctic and South America. The municipality offers some of the best quality of life in British Columbia. Please respond with curriculum vitae and written vision of your preferred future to CDA ACCESS Box # 2652. (12/02)

BRITISH COLUMBIA East Vancouver

For sale established family/general practice. Dentist wants to retire by January 1995. Excellent patient flow. Eight-year-old practice with three operatories. \$400,000 gross with low overhead. Contact:

Bing C. Wong & Associates Ent. Ltd.
(604) 682-7561. (12/01)

FOR INFORMATION ON B.C. DENTAL PRACTICES FOR SALE CALL

Health Pro Realty Ltd.

(604) 538-7838

Suite #239 - 1959 152nd Street,
White Rock, B.C. V4A 9E3

ALBERTA - Calgary: Orthodontic practice for sale. Great place for prosperity and lifestyle. Long established premium practice grossing \$750,000 on 135 days. Nets 45%, plus tax breaks. Modern progressive philosophy. Top trained staff, owner at peak of career and available to ensure smooth transition. Price not an issue. Call (403) 262-4591. (09/01)

ALBERTA - Edmonton: For sale well-established busy general practice. Modern, attractive, bright office. Exceptionally friendly patients. Very low rent, two ops. (plus two others

plumbed/wired and ready to set up). Near West Edmonton mall, owner retiring. Call (403) 481-0080, or (403) 486-2982 evenings, or reply to CDA ACCESS Box # 2653. (12/02)

SASKATCHEWAN Practice for sale

Moderate income practice for sale, all new equipment.

Progressive surroundings.

Please reply to

CDA ACCESS Box # 2645. (11/13)

ONTARIO - North Toronto: Dental office for rent - 400 sq. ft., Bayview/Eglinton area, immediate occupancy. Additional room to expand when needed (negotiable). On site parking plus street parking. Call (416) 485-9934 (days) or (416) 485-0059 (nights). (11/01)

ONTARIO - Toronto: For sale, established oral surgery practice. Fully equipped office, ideal for a recent graduate, an established practitioner or as a satellite office. Desirable mid-town location with excellent access to public parking and transportation. Please reply to CDA ACCESS Box # 2646. (11/01)

ONTARIO - Toronto: General practice for sale. North York store-front plaza, computerized, fully-equipped four ops. Over 2,000 active charts. 600K income in 1993. 40 new patients per month. Great opportunity for aggressive dentist or dental team. Please call (416) 223-1863. (12/02)

NEWFOUNDLAND Scenic West Coast Practice for sale.

Preventive-oriented family practice - high gross, low overhead. Great location - close to downtown. Great outdoor activities, close to skiing, golf course. Please reply to
CDA ACCESS Box # 2636. (09/01)

NEW BRUNSWICK - Moncton: For sale - Well established, busy, computerized practice, new premises. Two chairs and hygiene, preventive oriented, good recall base. Close to all winter/summer recreational areas, high growth area. Reply to P.O. Box 7302, Riverview, N.B. E1B 4T9. (05/13)

Professional Services

CHARTERED ACCOUNTANT

Let me assist you as your
Business Advisor.

Financial statements, tax planning, business and loan proposals, general business consultation. Eager to provide high quality, friendly service at reasonable rates. Call:
(416) 282-4240 for quotations. (11/01)

DENTAL REUPHOLSTERY

Specialists since 1980.

Recover your dental chairs, on weekends or on vacations. Chairs \$500 - \$600, dental stools \$100. Delivery fee for over 100 km.
Guaranteed workmanship.
Call **RED ROOSTER DESIGNS**
(519) 666-1635. (11/01)

Positions Available/Sought

YELLOWKNIFE, N.W.T.

Wanted - motivated associate to provide quality and comprehensive dental care. A family-orientated general practice, in a spacious modern office with full support staff.
Please send resume to
CDA Access Box # 2647. (11/01)

WHITEHORSE - YUKON

Very busy, well-staffed, friendly, six-operator practice in downtown Whitehorse requires a dedicated full-time
Associate to start immediately.
Excellent opportunity for a motivated individual who can provide professional and comprehensive dental care with a preventative focus.
Whitehorse is a modern city located in the North, with numerous opportunities to become involved in the arts, sports and outdoors.
Please fax resume to **(403) 668-5121**
or call **(403) 668-2273.** (12/01)

BRITISH COLUMBIA - Prince George: Associate wanted. Looking for a motivated conscientious associate to work with owner in a large,

To place your

**CDA ACCESS
AD**

just call

**Neil
McGillivray**

at
(905) 278-6700

(Toronto Area)
or

(800) 661-5004.

ACCOUNTING & TAX SERVICES FOR B.C. DENTAL PRACTICES

- Incorporations
- Buying/Selling
- Family Trusts

300 - 2000 West 12th Avenue
Vancouver, B.C. V6J 2G2
(604) 736-6581



**MCCONNELL
GALLOWAY
BOTTESELLE**

National Affiliate
Porter Hétu

**CERTIFIED
GENERAL
ACCOUNTANTS**

very modern practice located in a rapidly growing university community in north central B.C. Excellent opportunity to increase a new graduate's clinical and practice management skills. For information call (604) 964-6700. (10/13)

BRITISH COLUMBIA - Surrey: Seeking a full-time associate for family-oriented general dentistry practice in Vancouver suburb. Previous associate is retiring. Please send resume to CDA ACCESS Box # 2632 or fax to (604) 576-5738. (08/01)

BRITISH COLUMBIA - Nanaimo: Excellent opportunity for an associate to work as a sole dentist in a retail dental practice, experience an asset. Opportunity to buy-in starting on February 1, 1995. Located in Nanaimo B.C. Great growth, recreation and lifestyle on the ocean. Call (604) 756-1200 days, or (604) 756-1082 evenings.
(12/03)

BRITISH COLUMBIA - Comox: Associateships. Do you want to work in a quality Vancouver Island commu-

nity? Motivated and experienced associate required for a spacious modern, well established office. Would suit individual with interest in practice management skills. Opportunity of business association in the near future for the right individual. Contact: Tel: (604) 339-4044 Business Hours, (604) 339-2342 Evenings and Weekends. (01/03)

BRITISH COLUMBIA - Victoria: Associate opportunity. Take over existing patient base in a very busy, large, computerized four-dentist practice. Extended hours, family practice. Must be experienced, outgoing and motivated. Position available immediately. Call Dr. Don Bays (604) 381-6433 (O), (604) 595-8050 (H). (01/02)

ALBERTA - NORTHERN REGION

Wanted associate for growing practice, bustling and prosperous community. Previous work experience an asset but not a requirement. One hour air time from Edmonton.

Please reply to
CDA ACCESS Box # 2656. (01/02)

ALBERTA - Lethbridge: Associate required. Seven-chair, one-doctor general practice with large focus on orthodontics requires associate immediately. Up to seven month backlog on some services. Prefer high-toned 1990-1993 graduate. Please inquire in writing to: Office Manager, Dr. L. Mark Evans, 514 5th Avenue South, Lethbridge, Alberta T1J 0T8 or fax (403) 320-6710. (12/02)

ALBERTA - Edmonton: Experienced dentist is seeking part-time position (two or three days per week) in Edmonton and region to start early in 1995, willing to work evenings. Reply to CDA ACCESS Box # 2654. (12/02)

ALBERTA - Rocky Mountain Region: Associate wanted for dental practice located in Rocky Mountain foothills, with fishing, hiking, skiing and hunting at your door, in west central Alberta. This busy six-operator self-contained practice requires a full-or part-time motivated and caring associate to join solo dentist. Please fax inquiries to (403) 845-7610. (10/01)

ALBERTA - Medicine Hat: Full-time associate required to start May/June 1995. Require above average academic achievement, good character, socially responsible with a deep concern and commitment for the care of others. Modern and spacious family-oriented clinic features 16 operatories and is well located in a busy and growing community. Please call Kevin at (403) 526-0777. (11/01)

ALBERTA - Calgary : Associateship sought. Part-time or full-time associateship sought by dentist with seven years experience for Calgary and vicinity (within 45 minutes). Call (306) 585-6313 or reply to CDA ACCESS Box # 2643. (10/01)

ONTARIO - Kitchener: Locum/associate. Successful Kitchener practice is seeking a dentist for Spring/Summer 1995. Locum possibly leading to associateship. Must be personable and caring. Please reply to CDA ACCESS Box # 2657. (01/03)

ONTARIO - Haldimand-Norfolk Region: Associate needed in a well-established busy general practice. Preference given to long-term caring individual who will reside in region.

A person whose interest lies first with the patient's well-being is a must. Office is up-to-date, and income potential is considerable. We are centrally located in a rural setting yet close to all amenities, 30 minute drive from Hamilton. Please call (519) 426-2273 and ask to speak with Cathy, evenings call (519) 582-2914. (12/02)

ONTARIO - Southwest Region: Periodontist and endodontist required for a multi-specialty practice. Part-time initially with possibility of developing into a full-time partnership. Reply to CDA ACCESS Box # 2641. (10/01)

ONTARIO - Ottawa: Associate required for a well-established five-year-old practice. Located in a modern medical building, with large windows and a great view from each operator. Very good patient flow. Ideal for a young motivated dentist. Future purchase option. Reply to CDA ACCESS Box # 2650 or call (613) 744-4532 and ask for Tania. (11/01)

*At last you have
a better way
to access
the dental
marketplace.*

*To place your
CDA ACCESS AD*

*Call
Neil
McGillivray*

*at
(800) 661-5004*

*in Toronto
call
(905) 278-6700.*

Equipment Sales, Service

SASKATCHEWAN: Equipment wanted. Wanted used Axial-Tomb 60. Call (306) 463-4488. (12/02)

NEWFOUNDLAND - Mount Pearl: Need a computer? Take over my lease (2 1/2 yrs. left on a 5 year lease at \$588/ month) Exan 486-33 CPU, 1.2 Mb floppy, 4 Mb Ram, 10 serial and 1 parallel port, 212 Mb hard drive, 120 Mb Streamer, XENIX Operator, 2400 baud external modem, VGA color monitor, B/W monitor, HP IIIP laser printer, and Roland dot matrix printer, software licence under Exan Dentex. Call (709) 747-3041 Rob or Gillian. (12/01)

NOVA SCOTIA - Halifax: Dental instruments for sale. All you need to start up your practice includes pulp vitality tester, impression trays, forceps, etc., almost new! Will sell for \$3,500, obo, replacement cost \$6,500 plus PST Must go as package, please call (902) 445-4171 or (902) 443-8888 Dr. O. Sterling. (11/01)

PRICE BREAKTHRU

**\$90.00 Per unit*
semi-precious metal incl.**

A five-year quality and satisfaction guarantee. Canadian Qualified Technicians will manufacture your ceramic crown and bridge prescription to perfection.

**Ceko Dental Laboratory
208, 2705 Centre Street, N.W.
Calgary, Alberta T2E 2V5
Tel: (403) 276-3455**

**Conditions:*

1. Regular price \$125.00 per unit reduced to \$90.00 when payment enclosed with Rx.
 2. Semi-precious metal (6% gold).
 3. We pay shipping from our Lab. to your door.
 4. All Rx. shipped out within six days of receipt.
- We use *Priority overnight service.* (11/01)

DANSEREAU HEALTH PRODUCTS CLINIC II

California Chair

All electric, auto return. Reversible cushions, choice of 30 colors.

Delivery System

3-Handpiece automatic foot control, air lock arm, stainless steel tray,

3-Way syringe, X-ray view box.

Assistants Package

HVE, saliva ejector, 3-way syringe, cuspidor, manual cup filler, quick disconnect, J-box with controls for easy installation.

Light

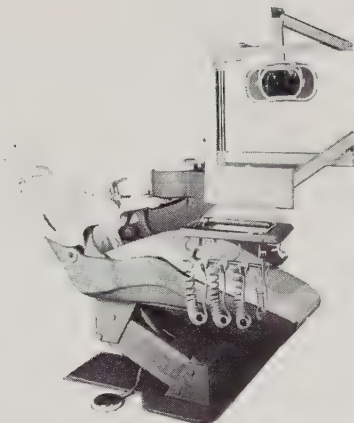
Chair mounted light, post plate and cup.

Retail \$5,325. With Cash Discount \$3,995.

We accept Visa & MasterCard.

All prices FOB factory Anaheim.

Manufacturer direct sales for 31 years.



DANSEREAU HEALTH PRODUCTS

559 S. Rose Street

Anaheim, CA 92805

(714) 776-5357 FAX (714) 776-4652

(800) 423-5657 (USA & Canada)

DANSEREAU HEALTH PRODUCTS CANADA

3412 Oxford Street, Port Coquitlam, BC

(604) 941-6799, (800) 561-3177 (Canada)

Miscellaneous

CONDOS FOR SALE

Costa Rica, Central America

Canadian physician is building 16 condo apartments at **Jaco Beach, Costa Rica**, 100 feet from the Pacific Ocean. One bedroom units \$69,000 - \$74,900 U.S. funds. Limited mortgage available. Ecotourism, contact R. Aubin MD for a complimentary brochure. **Phone (613) 526-1952, Fax (613) 526-0990.** (01/03)

Meetings & Announcements

FEBRUARY 17 - 19, 1995

4th ANNUAL WHISTLER DENTAL & SKI SEMINAR

Delta Mountain Inn, Whistler, B.C.
For information contact: Vancouver Chapter of Alpha Omega Fraternity, Louise Huber (604) 278-9877. (09/01)



The Southern California Society of Oral and Maxillofacial Surgeons

Presents: Conscious Sedation In the Dental Office

- A Review Course for Doctors and Office Staff •

March 11 & 12, 1995

• Le Meridien Hotel • Newport Beach, CA •

Course Agenda:

- Overview of Conscious Sedation
- Patient Monitoring
- Management of Airway Emergencies
- Management of Cardiac Emergencies
- Pharmacology of Sedative Drugs
- EKG Interpretation
- Preparing for the Office Evaluation
- Office Emergencies
- Venipuncture Techniques/Complications
- Management of Syncope/Drug Reaction/Seizures
- Medical Evaluation of the Sedation Patient

Course Director:

Mary Delsol Liebel DDS, Chief
Oral & Maxillofacial Surgery Section
Long Beach, California VA Medical Center

Faculty:

Alan L Felsenfeld DDS, Assistant Professor
Department of Oral & Maxillofacial Surgery
UCLA School of Dentistry, Los Angeles, CA

Michael W Marshall DDS, Assistant Professor
Department of Oral & Maxillofacial Surgery
USC School of Dentistry, Los Angeles, CA

Accreditation:

This program is approved for Category I credit hours by the California State Board of Dental Examiners. Four CE hours will be given for each lecture session, two CE hours will be given for the workshops.

To request information • Brochure • Hotel Accommodations •
Contact Susan Smith, SCSOMS Executive Director • 818-449-6229 •
2555 Huntington Drive • Suite F • San Marino • California 91108 • USA

BOOK REVIEWS

Médecine buccale : méthodologie du diagnostic 2^e édition

par Denis Forest, Pierre Duquette, Monique Michaud, et Patrick Girard

Gaëtan Morin éditeur Ltée., 1994.
456 pages, illustrations couleur, et noir et blanc, 125\$; ISBN: 2-89105-416-4

Les Drs Denis Forest, Pierre Duquette et Monique Michaud sont tous spécialisés en médecine buccale et enseignent à la faculté de l'Université de Montréal. Ils ont également plusieurs publications à leur actif. Ils ont tous les trois collaboré à une première édition de *Médecine buccale : méthodologie du diagnostic*. La demande étant vive et pressante, ils ont décidé de rédiger une deuxième édition. Un quatrième auteur s'est joint à eux, le Dr Patrick Girard, doyen de la faculté de chirurgie dentaire de l'Université de Paris VII. Pendant trois ans, ils ont mis à contribution leur savoir personnel pour permettre une mise à jour des connaissances actuelles.

Cet ouvrage en langue française s'adresse autant aux étudiants sous gradués, aux dentistes en pratique générale qu'aux spécialistes. L'objectif de ce livre est la description d'une méthode simple et précise pour l'identification et le traitement des anomalies de la cavité buccale.

Dans un premier temps, les signes cliniques et les techniques de communication sont abordés. Puis l'anamnèse, la signification des signes et symptômes ainsi que l'identification des structures buccales normales qui permettent de déceler ce qui est anormal sont présentées. Ensuite, l'importance de la lecture de clichés radiologiques périapicaux, interproximaux et panoramiques est expliquée. Les chapitres suivants traitent des tests endodontiques, des analyses de laboratoire, de l'examen pédiatrique et orthodontique ainsi que la génétique crâniofaciale. Finalement un chapitre est consacré à l'élaboration du diagnostic approprié et du plan de traitement. En

dernière partie, on retrouve un abrégé de terminologie français-anglais et anglais-français. Une liste de synonymes de termes utilisés au Canada et en France permet de solutionner la confusion outre-mer qui existe quelquefois. Un questionnaire d'auto-évaluation avec réponses est présent à la fin de chaque chapitre.

Des illustrations de cas clinique tout au long du livre sont claires, en couleur et explicites. D'innombrables références photographiques et radiologiques agrémentent le texte pour faciliter la compréhension. Cet ouvrage traite d'anomalies, de maladies et de cas spéciaux rencontrés quotidiennement en cabinet et qui requièrent des précautions pré-opératoires. Un résumé des médicaments les plus fréquemment rencontrés, des interactions à éviter et des effets sur les traitements dentaires est fourni. De plus, la table des matières est complète et la recherche des différents sujets est facile, rapide et efficace.

Bref, cette deuxième édition semble un outil de travail et un livre de référence essentiel présentant trois caractéristiques fondamentales à l'instar du diagnostic : précis, rigoureux et complet.

Revue par :

Isabelle Fortin, DMD
Pratique privée et chargée de clinique
(Université de Montréal).

The Art and Science of Operative Dentistry — 3rd edition

edited by C.M. Sturdevant et al.

Mosby Year Book, Inc., 1994.
824 pages, 2,497 illustrations, \$99.95;
ISBN: 0-8016-6366-0

This book is the work of dental educators in the area of operative dentistry and associated disciplines at the University of North Carolina. The reader's interest is maintained by a consistent correlation of didactic and scientific material to the clinical experience. Those seeking a "handbook" of operative dentistry, however, are advised to look

elsewhere, as this is a voluminous discourse covering many related topics.

There is an excellent presentation of current epidemiologic factors (e.g. aging population, increasing incidence of root caries) and the resultant impact on everyday practice. Caries is correctly discussed as an infectious, treatable, bacteriologic disease, with particular attention to ecology, risk assessment, and preventive modalities. The discussion of dental examination and the presentation of criteria for placement and replacement of dental restorations is current and appropriate. The omission of relevant subject matter, such as the relationship of pulpal anatomy to pin/slot placement for complex restorations, is disappointing, especially in view of the extensive attention paid to such topics as CAD-CAM systems. The use of photographs and radiographs in conjunction with their diagrammatic counterparts is educationally excellent, particularly when used to demonstrate varying degrees of interproximal and pit/fissure carious lesions.

Biomaterials science, and especially adhesion technology, is made understandable and is related to modern dentistry. The amalgam/mercury toxicity question is addressed in a forthright and responsible manner and critical thinking is encouraged. The reader is introduced to potential amalgam alternatives, such as the ADA-NIST-developed cold-weld material, and the anticipated future use of adhesives in conjunction with amalgam.

Operative dentistry procedures are described in a manner suitable for both the student and practitioner. The material is up-to-date to the extent possible in textbook publication, and suitable attention is paid to time-honored and proven techniques. Controversies are clearly delineated and addressed by the authors. The section on Class II amalgam procedures is didactic while also providing worthwhile, common-sense solutions to frequently encountered clinical problems. The chapter on Class II cast restorations is well-done — although it should be noted that rubber dam isolation is usually recom-

enter

Seconds VS Days

Dr. Watson
303-1589 Main St.
Ottawa, Ontario
L5P 2Q9

ABC Insurance Group Inc.
19521 Coranati Blvd.
Toronto, Ontario
S2Y 7W3



Submitting insurance claims has never been easier! With one press of a button, **CDAnet** links your practice to a network of dental insurance carriers to provide immediate confirmation of claim receipt or on-line adjudication.

This easy-to-use electronic claims processing system, developed by the Canadian Dental Association, has no transaction or user fees.

Designed by dentists for dentists, **CDAnet** puts you on the information superhighway to eliminate wasted time waiting for claims to be received by mail or other problems such as delivery delays or lost mail. Immediate claims processing means greater efficiency and improved cash flow.

To find out how you can take advantage of the information age and put **CDAnet** to work for you, call 1-800-267-9701.



**CANADIAN
DENTAL
ASSOCIATION**



CDAnet

**Dentistry's National
Information Network**

mended for all preparation procedures, not just anticipated pulpal misadventures as suggested by the authors. The chapter on direct gold (foil) restoration provides a good introduction to this challenging area of operative dentistry for the zealot.

I would highly recommend this text for usage in undergraduate curricula and as a reference for new and experienced practitioners alike. It is sound and current in every aspect of operative dentistry and provides an excellent perspective on the many associated disciplines in this area of dental practice.

Reviewed by:

*Dr. Lex MacNeil, DDS
Assistant Professor, Division of Operative Dentistry, Department of Clinical Dental Sciences, University of British Columbia.*

Osseointegration in Dentistry: An Introduction

by Philip Worthington, Brien R. Lang, and William E. LaVelle

Quintessence Publishing Co., Inc., 1994. 120 pages, 50 black and white illustrations, \$28 (U.S.); ISBN: 0-86715-281-8

The introduction of the technique of osseointegration by Per-Ingvar Brånemark in the late '70s initiated a profound change in the way educators dealt with the edentulous predicament. The subsequent introduction of this treatment method to North American dental education has enlarged and enhanced the compelling nature of this therapeutic breakthrough. Luckily for the profession, the educational effort has continued. Numerous publications attest to the impressive data already available to justify the virtual routine prescription of implant prosthodontic technique.

Osseointegration in Dentistry: An Introduction is a welcome new book co-written by seven distinguished North American educators — led by co-editors Drs. Worthington, Lang and LaVelle. The text introduces the subject of osseointegration to undergraduate dental students. This contribution was long overdue, and the authors should be complimented for their timely synthesis of a large body of complex scientific clinical infor-

mation. The book is eminently readable, the illustrations simple and self-explanatory, and the design conducive to an enjoyable, easy read.

The 11 chapters are prefaced by an introductory assessment of osseointegration. Key elements that underscore the dentist's decision-making regarding the choice of implant are identified, and this leads, quite logically, to a warning regarding the risks of extrapolating results from one product to another. The comprehensive list of addressed topics includes biological as well as mechanical considerations, plus aspects of the clinical use of these techniques. None of these basic topics are discussed in-depth, but then the book's objective seems to be to provide nothing more than a basic understanding. This approach also makes the book a very useful, and indeed desirable, read for the entire dental professional team, since it can be easily read and appreciated by non-academic personnel.

The publication is of the usual impeccable standard that has come to be associated with Quintessence products. At about \$35 (Cdn), this book is a steal. I recommend it to the *Journal's* readers with enthusiasm.

Reviewed by:

*George A. Zarb, B.Ch.D., DDS, MS, FRCD(C), Dip. Odont. LLD
Professor and head of the department of prosthodontics, faculty of dentistry, University of Toronto.*

ADVERTISERS' INDEX

Adec	38, 39
Ash Temple	IFC, 3
Bisco Dental	IBC
CDA Access	68-71
CDA Library	60
CDA Membership	12
CDA RSP	24
CDAnet	73
CDSPI	20
Communiqué	31
DCF	16, 61
E&D Dental	OBC
Hoechst Roussel	10
McGill University	24
Panoramic Corp.	16
Premier Dental	4
Promot.	44
Surviving and Thriving	57, 58

DID YOU KNOW?

Employee benefits are growing faster than earnings...

Employers' payroll contributions to health and dental care, and pension plans, and to mandatory programs such as UI, CPP and QPP, and worker's compensation almost doubled from 4.6% of labor income in 1961 to 8.7% in 1979. It has continued to grow since then.



JOURNAL

January/
Janvier
1995
Vol. 61
No. 1

How To GET YOURSELF OUT OF A STICKY SITUATION!

1
Non-Sticky Handling

2
Highly Polishable

3
Fifteen Most Popular Shades

Available Kits & Shades

- Primary Kit**
A1, A2, A3.5, C2, D3
- Secondary Kit**
A2-op, A3, B3, C3, Incisal/Translucent
- Cervical Kit**
A5, B5, B4, C4, A4-op
- Compules**
All Shades, 10 Compules/Pack

ÆLITEFIL™ is available in Bulk Syringes as well as convenient Single Dose Tips that can be used with the popular Centrix Syringe.

ÆLITEFIL™ — The Non-Sticky Universal Composite.

From the makers of ALL-BOND® 2 comes a new universal hybrid composite that offers non-sticky handling for all your composite restorations. ÆLITEFIL's 0.7µ average particle size, hybridized with submicron silica (0.04µ), provides higher filler loading for unsurpassed physical properties, optimal handling and high polishability. There are fifteen shades, including the most popular VITA® shades* as well as incisal, opaque, and extra light and dark shades. And, of course, ÆLITEFIL is light-cured and compatible with all popular adhesive systems. So, call us today — and get yourself out of a sticky situation!

*Shades are correlated on a best match basis. VITA is a trademark of Vita Zahnfabrik
© 1994 Bisco Dental Products, Inc.



**TO ORDER
ÆLITEFIL, CALL:**

FOR WESTERN CANADA & QUEBEC:
Bisco Dental Canada
800-667-8811, 604-276-8662

FOR ONTARIO & MARITIME PROVINCES:
Clinical Research Dental Supplies and Services
800-265-3444, 519-641-3066

A

JOURNAL

of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

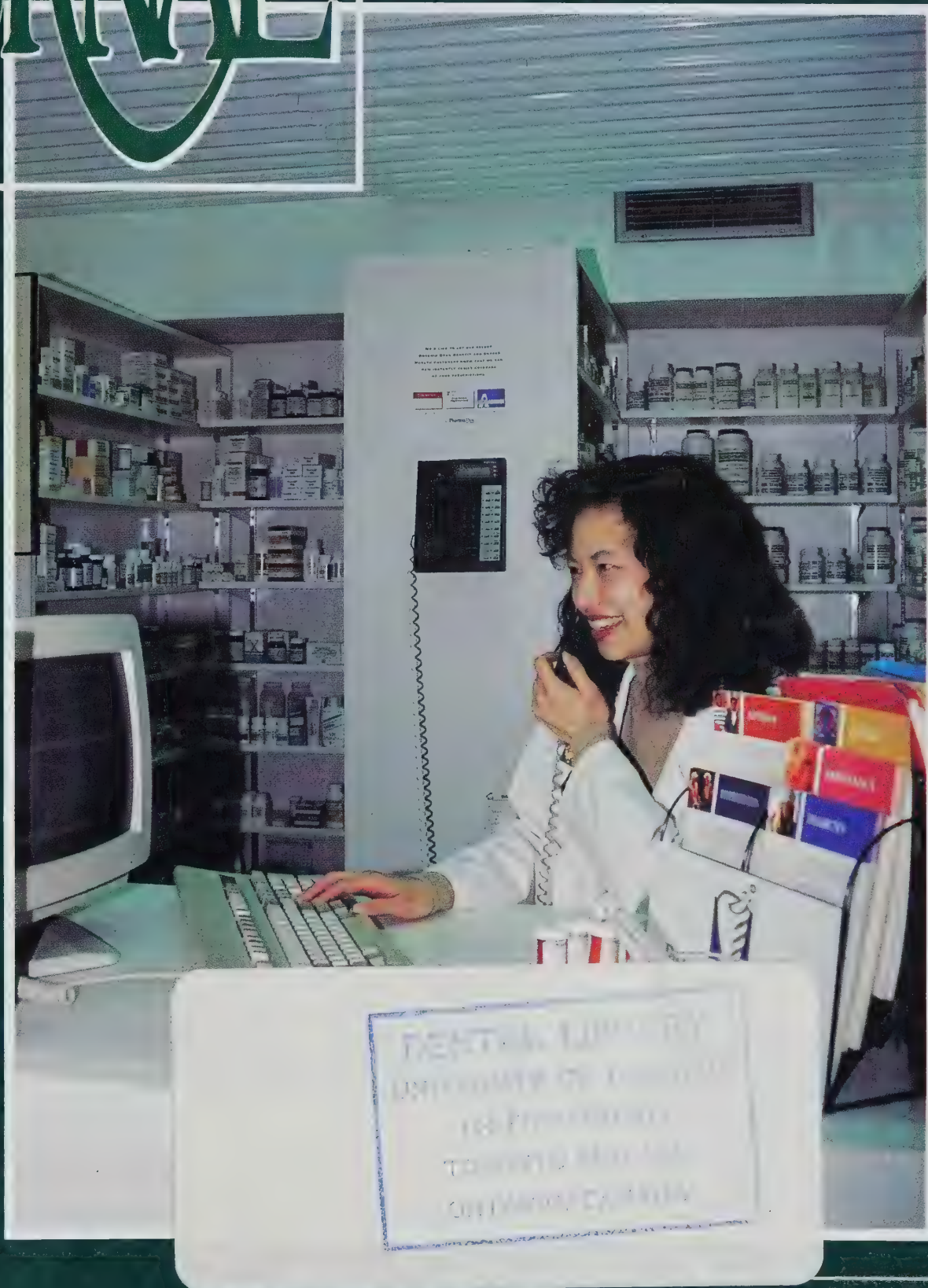
Vol. 61 No. 2

FEBRUARY
FÉVRIER

1995

If undeliverable
to Addressee
RETURN TO SENDER
Return Postage
Guaranteed

Si non livrable
au destinataire
RETOURNER À
L'EXPÉDITEUR
Port Payé



Pharmacology
Pharmacologie

What's so distinctive about Ash Temple service?

At Ash Temple, we recognize that when you need supplies, or your equipment malfunctions, you can't afford to wait. You need fast, efficient response.

That's why it's good to know you can rely on the people at Ash Temple.

Ash Temple's team of experts is composed of people who combine seasoned experience with the latest knowledge of industry developments.

Our service commitment is a combination of three important elements:

- An outstanding dedication to promptness and efficiency on the part of all our staff from coast-to-coast.

- A distribution infrastructure devoted to providing consistent reliability with high order fill rates unrivalled in Canada.
- An enviable reputation earned over years of service to the Canadian dental profession.

Ash Temple can provide the service you require from within your local community.

Call us. We're there when you need us.

**Ash
Temple**
LIMITED

Keeping you a step ahead.



Frank Elborne,
Vancouver Branch Mgr. (retired)
50 years with Ash Temple.

F.C. (Cy) Elborne, President
With Ash Temple 20 years.

The Ash Temple Companies —
Ash Temple Limited, Servident, A-Tech, Microbex Aseptics, Acrylium

ASH TEMPLE SERVICES:

Ash Temple has 14 strategically located, full-service depots —
Halifax
Saint John
Quebec
Montreal
Ottawa
Toronto
Hamilton
London
Winnipeg
Regina
Calgary
Edmonton
Vancouver
Victoria

In addition, there are sales and service staff located in 11 other communities across Canada.

All locations stock over 100,000 consumable items.

Ash Temple can assist you to —
• locate dental practice sites
• search for associates
• secure staff
• design your office
• help in selling your practice

Ash Temple's Equity Program allows you to set up a convenient schedule for delivery of supplies with a variety of payment options, volume discounts and rebate plans.

The annual Ash Temple Equity Grant supports dental associations and dental faculties of Canadian Universities.

CDA MISSION STATEMENT



"The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians."

SPECIALTY EDITORS

Endodontics

Dr. W. H. (Bill) Christie

Oral and Maxillofacial Surgery

Dr. David S. Precious

Oral Pathology

Dr. James H. P. Main

Orthodontics

Dr. Kenneth E. Glover

Pediatric Dentistry

Dr. Victor Legault

Periodontics

Dr. James E. (Jim) Stakiw

Prosthodontics

Dr. Michael MacEntee

Public Health

Dr. Donald Lewis

Radiology

Dr. Robert E. Wood

CDA EXECUTIVE COUNCIL

President

Dr. Bryun Sigfstead
Edmonton, Alberta

President-Elect

Dr. James Brookfield
Kirkland Lake, Ontario

Vice-President

Dr. Barry Dolman
Montreal, Quebec

Dr. John Diggins
Vancouver, B.C.

Dr. Toby Gushue
St. John's, Nfld.

Dr. Richard D. Sandilands
Edmonton, Alberta

Dr. David Somer
Hamilton, Ontario

Dr. Tom Breneman
Brandon, Manitoba

Dr. Louis Dubé
Sherbrooke, Quebec

CONSULTING EDITORS

Anesthesiology

Dr. Earle Young

Dental Materials

Dr. Peter T. Williams

Medicine

Dr. George K.B. Sandor

Pharmacology

Ms. Helen Grad

Forensic Dentistry

Dr. Robert Dorion

Infection Control

Dr. Joel Epstein

Practice Management

Dr. Bob Brandon

Cosmetic Dentistry

Dr. Ken Neuman

Nutrition

Mrs. Nina Burgess

Canadian Dental Hygienists
Association

Ms. Carol Matheson

Worobey

Canadian Dental Assistants
Association

**Ms. Charlotte Peer-
Miller**

CDA STAFF

EXECUTIVE

DIRECTOR'S OFFICE

Executive Director

A. Jardine Neilson

CORPORATE AFFAIRS

Manager, Corporate Affairs

Sandra Davis

Coordinator,

Board and Executive

Suzanne Burton

PROFESSIONAL
SERVICES

Director, Education and
Accreditation/Professional
Services

Brian Henderson

Associate Director,

Education and Accreditation

Susan Matheson

Coordinator, Education and
Accreditation

Gay MacQuarrie

Coordinator, DAT

Danuta Askew

Coordinator, Purchaser Infor-
mation Program, CDAnet

Patricia Drake

COMMUNICATIONS

Director of Communications

Linda Teteruck

Librarian

Martha Vaughan

Manager, Membership
Services

Carol Anne St. Laurent

Manager, Information
Services

Lisa Burke

ADMINISTRATION

Director of Administration

Joel R. Neal

Manager, Human Resources

Tefiro Kyeyune

Secretary, Membership

Lydia Allison

JOURNAL

Published monthly by the Canadian Dental Association at 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6. Copyright 1982 by the Canadian Dental Association. Authorized as Second Class Mail, Registration Number 5384. Postage paid at Ottawa, Ont.

Subscriptions: All subscriptions payable in advance in Canadian funds. In Canada — \$48 (+ GST); United States — \$53; all other — \$58.

Subscriptions are for 12 issues, not necessarily conforming with the calendar year.

Notice of change of address should be received before the 10th of the month, to become effective the following month.

Member:

American Dental Editors' Association

Canadian Circulations Audit Board

Call CDA for information and assistance toll-free at:

1-800-267-6354

CDA Fax No.: 1-613-523-7736

All matters pertaining to advertising should be directed to:

Keith Health Care Communications
1382 Hurontario Street
Mississauga, Ont.
L5G 3H4

Attn: Ms. Janet Duffield,
Sales Representative, or,
Mr. Neil McGillivray, CDA Access Representative

Tel.: (905) 278-6700

Fax: (905) 278-4850

JOURNAL

February/
Février
1995
Vol. 61
No. 2

THE NEW LEADER!

PREMIER[®],
the *new* leader in

dental instruments, offers you traditional and innovative designs. More and more dentists and hygienists continue to choose Premier Light Touch[™] hollow handle Scalars and Curettes. Each instrument is precisely and consistently made, *entirely* of surgical grade stainless steel, to endure repeated sterilizations. Choose Premier[®] Instruments for a difference you can feel.

FEEL THE DIFFERENCE!

Premier Scalars and Curettes are available in Light Touch Round and Light Touch Octagon handles; both larger yet light in weight to lessen finger fatigue. Order now, through an authorized dealer to take advantage of this special offer.

*Free goods provided by participating dealers. Dealer may lower price in lieu of free goods. May not be combined with other instrument offers. Valid in USA and Canada only. Offer effective 1/1/95 thru 4/30/95.

Premier Dental Products Co., Box 111, Norristown, PA 19404 • 800-344-8235 • FAX 610-239-2398
Premier Dental (Canada) Inc., 480 Hood Rd., Unit 3, Markham, Ont. L3R 9Z3 • 800-465-8455

premier

ACT NOW!
Limited Time Offer



JOURNAL

CANADIAN DENTAL ASSOCIATION/
L'ASSOCIATION DENTAIRE CANADIENNE

FEBRUARY/FÉVRIER 1995
VOL. 61, NO. 2

Executive Director
A. Jardine Neilson

Editor
Dr. P. Ralph Crawford

Managing Editor
Terence Davis

Assistant Editor, Writer
Antonia Papadakou

*Coordinator, production
& desktop services*
Michelle Walters

Circulation Secretary
Rachel Galipeau

Scientific Editor (English)
Dr. Robert S. Turnbull

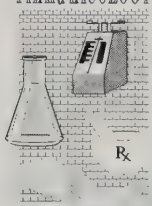
Scientific Editor (French)
Dr. Pierre C. Desautels

All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association. The editor reserves the right to edit all copy submitted to the *Journal*. Publication of an advertisement does not necessarily imply that the Canadian Dental Association agrees with or supports the claims therein.

The *Journal of the Canadian Dental Association* is published in both official languages, except scientific articles, which are published in the language in which they are received. Readers may request the *Journal* in the language of their choice.

ISSN 0709 8936
PRINTED IN CANADA

PHARMACOLOGY



- 105 **Pharmacologic Considerations In the Management Of Temporomandibular Disorders**

D.A. Haas, DDS, PhD, FRCD(C)

- 115 **Hi, I'm Your Neighborhood Pharmacist**

Patrick Crawford, B.Sc. Pharm., M.Sc.

- 127 **Benzydamine Hydrochloride (Tantum) In the Management Of Oral Inflammatory Conditions**

R.S. Turnbull, DDS, Dip. Perio., M.Sc.D.

CLINICAL



- 137 **Compression Implants: Case Report Of a Surgical, Prosthetic, and Cosmetic Failure**

Con H. Jooste, B.Ch.D., M.Ch.D., PhD

Chi-Chia Edward Tai, DDS

Robert Edgar Wood, DDS, M.Sc., Dip. Oral

Radiol., FRCD(C)

- 143 **The Effect Of Storage Temperature On the Resistance To Failure Of Dental Local Anesthetic Cartridges**

J.G. Meechan, BDS, PhD

D. Donaldson, BDS, FDS, RCS, MDS

A. Kotlicki, PhD, D.Sc.

RESEARCH



- 149 **A Survey Of Dentists and the Services They Provide To Disabled People In the Province of Manitoba**

Alan R. Milnes, DDS, D. Ped., PhD, FRCD(C)

Robert Tate, B.Sc., M.Sc.

Eileen Perillo

- 159 **Canines inférieures permanentes à deux racines**

Raymondien Ouellet, BA, DDS

DEPARTMENTS



- 83 **Letters To the Editor**

- 87 **Announcements**

- 91 **Editorial**

- 93 **President's Column**

- 95 **CDSPI Reports**

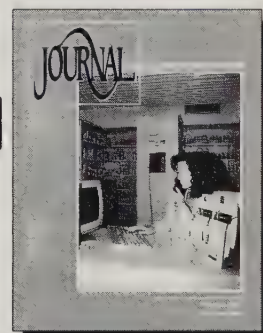
- 97 **News Update**

- 101 **Practice Management and Success**

- 117 **CDA Annual Dental Meeting**

- 162 **CDA Access Ads**

- 166 **Advertisers' Index**



Cover: Pharmacy (Photograph Courtesy of Dr. Walter Pelech).

JOURNAL

February/
Février
1995
Vol. 61
No. 2

METASYS

METASYS *Green & Clean M2*



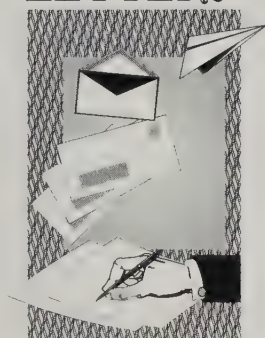
METASYS Green & Clean M2 consists of two disinfecting solutions which are used in rotation. Through this dual application microbiological resistance can be largely prevented, since a new generation with adapted genetic information may come into existence every 20 minutes.

METASYS Green & Clean M2:

The perfect hygiene system for all suction lines and amalgam separators. M2 is pH-neutral and bio-degradable.

For more information, please contact your dealer or **METASYS**.
(U.S.A.) 801- 627-6316 (Canada) 905- 692-9037

LETTERS



Toothbrushes: Manual and Electric

I would like to respond to a paper published in the October 1994 issue of the *Journal* (Hoover, J.N. and Singer, D.L. Toothbrushes: Manual and Electric. *J Can Dent Assoc* 60:880-884, 1994).

Reference number 21 was incorrect, both as to the authors and the statements made in the conclusion. Unfortunately, this error completely changes the inferences one can draw from the study.

The correct authors were Baab and Johnson, who did not report the findings stated. The authors cited, Glavind and Zeuner, actually published in the *Journal of Clinical Periodontology* (The Effectiveness of a Rotary Toothbrush on Oral Cleanliness in Adults, 13:135, 1986). They reported a comparison between the rotary brush and a combination of techniques including manual brush, toothpicks, and an interproximal brush. The difference is highly significant.

I applaud Drs. Hoover and Singer's efforts as a scholarly and well done piece, however, their conclusions are not based on the data, as amply reported in the literature, and diminish the reported efficacy of the rotary-powered brush without any real justification.

Herbert I. Bader, DDS
Concord, Massachusetts

A recent article (Hoover, J.N. and Singer, D.L. Toothbrushes: Manual and Electric. *J Can Dent Assoc* 60:

880-884, 1994) contained incorrect information about an electric rotary brush, the Rota-dent.

The reference which was credited to Glavind and Zeuner (number 21) is not correct. They were not the authors of the article cited. In fact, the correct authors were Baab and Johnson, who did not find the results credited to their article, namely, that "Glavind and Zeuner²¹ found no difference between the Rota-dent electric toothbrush and manual brushing." In short, the names of the authors (Glavind and Zeuner) are incorrect, and the cited article had nothing to do with the stated results.

Glavind and Zeuner authored an article that appeared in the *J Clin Periodontology* 13:135, 1986, titled: "The Effectiveness of a Rotary Electric Toothbrush on Oral Cleanliness in Adults." In this study, they did not compare the Rota-dent to only a manual toothbrush. They compared it to a comprehensive oral hygiene kit consisting of a conventional toothbrush, an interspace brush, toothpicks, disclosing tablets, and a lighted mirror. Their findings showed the Rota-dent to be as effective as the complete oral hygiene kit. This is a significant distinction from the manual brush alone.

Many studies indicate a significant difference in interproximal and furcation plaque control, gingivitis reduction, and patient compliance in favor of the Rota-dent.

In the summary of Hoover and Singer's article, it is stated that: "There is still no conclusive evidence that electric toothbrushes are better than manual toothbrushes." Recognizing that the term "conclusive" is open to individual interpretation, there is considerable evidence that the Rota-dent is clinically more effective than the manual toothbrush in controlled studies.

Lanny L. McLey, DDS, MS
Batesville, Arkansas

Bibliography

1. Boyd, R.L., Renfrow, A., Price, A. et al. Effects on Periodontal Status of Rotary Electric Toothbrushes vs. Manual Toothbrushes During Periodontal Maintenance: I. Clinical Results. *J Dent Res*

67:Abstr. 2292, 1988; and *J Periodontol* 60(7): 390-394, 1989.

2. Murray, P., Boyd, R.L., Daly, R.P. et al. Effect of Periodontal Status of Rotary Electric Toothbrushes vs. Manual Toothbrushes During Periodontal Maintenance: II. Microbiological results. *J Dent Res* 67:Abstr. 2291, 1988; and *J Periodontol* 60 (7): 396-400, 1989.

3. Glavind, L. and Zeuner, E. The Effectiveness of Rotary Electric Toothbrush on Oral Cleanliness in Adults. *J Clin Periodontol* 13(2):135-138, 1986.

4. Love, J.W., Drisco, C.L., Killow, W.J. et al. The Effectiveness of a Rotary Action Power Toothbrush vs. a Manual Brush. *J Dent Res* 67:Abstr. 98, 1988.

5. Mueller, L.J., Darby, M.L., Allen, D.S. et al. Rotary Electric Toothbrushing: Clinical Effects on the Presence of Gingivitis and Supragingival Dental Plaque. *Dent Hygiene* 67(12):546-550, 1987.

6. Boyd, R.L., Renfrow, P., Murray, P. et al. Effect of Rotary Electric Toothbrush vs. Manual Toothbrush on Periodontal Status During Orthodontic Treatment. *J Dent Res* 67:Abstr. 97, 1988; and *Am J Orthod Dentofacial Surg* 96(4):342-347, 1989.

7. Efraimsson, H.E., Johansen, J.R., Haugen, E. et al. The Abrasion Effect From a Rotary Electric Toothbrush (Rota-dent) on Dentin. *Clin Prev Dent* 12(4), 1990.

8. Thompson-Neal, D., Evans, G.H. and Meffert, R.M. Effects of Various Prophylactic Treatments on Titanium, Sapphire, and Hydroxyapatite Coated Implants: An SEM Study *Int J Periodontics Restorative Dent* 9(4), 1989.

9. Van Der Linden, E., Cross-Poline, G., Tilliss, T.S.J. et al. The Efficacy of the Rota-dent Compared to a Conventional Toothbrush. *J Dent Res* 67:Abstr. 2289, 1988.

10. Bader, H.I. and Dubrovic, D. Comparison of a Powered Rotary Plaque Removing Device (Rota-dent) in Controlling Chlorhexidine Stain as Compared with Manual Technique. *J Dent Res* 69:Abstr. (Jan.), 1990.

11. Meyer, C.J., Killoy, W.J., Love, J.W. et al. The Effectiveness of Five Oral Hygiene Devices on Removal of Plaque From Furcation Areas of Multirrooted Teeth. Unpublished.

12. Preber, H., Ylipaa, V., Bergstrom, J. et al. A Comparative Study of Plaque Removing Efficiency Using Rotary Electric and Manual Toothbrushes. *Swed Dent J* 15:229-234, 1991.

13. Boyd, R.L. and Rose, C. The Effect of Rotary Electric Toothbrush vs. Manual Toothbrush on Decalcification During Orthodontic Treatment. *J Dent Res* 71:Abstr. 1320 (March), 1992 and *Am J Orthod Dentofacial Orthop* (In Press).

14. Asmar, J., Nathanson, D. and Gianelly, A. Efficacy of a Rotary Electric vs. a

JOURNAL

February/
Février
1995
Vol. 61
No. 2



Manual Toothbrush in Orthodontic Patients. *J Dent Res* 71:Abstr. 1162 (March), 1992.

Authors' Response

We regret the error that occurred in the list of references pertaining to our article "Toothbrushes: Manual and Electric," which appeared in the *Journal of the Canadian Dental Association* 60(10):880-884, 1994. Reference number 21 should read as: Glavind, L. and Zeuner, E. The effectiveness of a rotary electric toothbrush on oral cleanliness in adults. *J Clin Periodontol* 13:135-138, 1986. In this study, the authors compared the Rota-dent to a comprehensive oral hygiene kit consisting of a conventional toothbrush, an inter-space brush, toothpicks, disclosing tablets and a lighted mirror. Their findings showed the Rota-dent to be as effective as the complete oral hygiene kit. Our article indicated that the comparison was made with only a manual toothbrush.

We would like to thank Drs. L.L. McLey and H.I. Bader for directing us to these errors.

J.N. Hoover, BDS, PhD
D.L. Singer, DDS, PhD

Well Done

I found the November 1994 *Journal* great. The best in a long time — great cover, good editorial, and the layout has improved vastly. Along with the *Communiqué* and CDSPI Reports, the lines of communication between members and the "CEO's" are better. I detect a more open, "Let's look at the other view more seriously" attitude emerging. Keep up the good work.

Conrad B. Sonntag, B.Sc., DDS
Redcliff, Alberta

Winter Solstice

The reference to the winter solstice in the December editorial of the *Journal* begs correction. The sun is farthest from the equator on approxi-

mately December 22nd, but it is farthest from the equator at nadir over the tropic of capricorn. The editor's comment on solstice could apply to the winter or summer.

Douglas Miller, DMD
Fort Francis, Ontario

Editor's Comment

I never really understood the intricacies of heavenly bodies. I guess that's why I chose dentistry as a career. However, *The Cambridge Encyclopedia* defines solstice as: "An event when the sun is at its furthest point from the equator, resulting in the longest day and shortest night (the summer solstice) in one hemisphere and the shortest day and longest night (the winter solstice) in the other hemisphere. In the northern hemisphere, the summer solstice is on 21 or 22 June and the winter solstice on 21 or 22 December.

ENDODONTICS

A Comparison Of Nine Medications For Post Root Canal Obturation Pain

The management of pain during and after endodontic treatment is of prime importance to both practitioner and patient. The association of pain with endodontic therapy has unjustly persevered since the inception of root canal treatment.

Many advances in technique and pharmacology have resulted in an almost painless approach to endodontics. Research conducted in recent years has resulted in significant advances in the pharmacologic management of post-operative discomfort.

The authors of this paper compared nine different analgesic and antibiotic/analgesic preparations as well as a placebo to determine their relative effectiveness for post-obturation endodontic pain control.

The main source of endodontic pain seen postoperatively is the inflammation of periapical tissues.

This can be due to instrumentation, irrigants or overfilling during obturation. Various studies have cited the incidence of post-operative endodontic pain to be from 1.4 to 20 per cent. The degree of discomfort is usually highest in the first 24 hours post-endodontic treatment whether this is after a cleaning and shaping appointment or an obturation appointment. It is this initial 24 hour postoperative period that the authors chose to study.

This prospective study involved 588 patients who required root canal obturation. Participants were given one of the following medications to take post-operatively:

- ASA 650 milligrams
- Acetaminophen 650 milligrams
- Ibuprofen 400 milligrams
- Ketoprofen 50 milligrams
- Acetamin/Codeine 325/60 milligrams
- Penicillin V 500 milligrams

- Erythromycin 500 milligrams
- Pen V/Ibuprofen 500/400 milligrams
- Pen V/Methylprednisolone 500/2 milligrams
- Placebo

All medications and placebo were administered in identical gelatin capsules and a double blind protocol was used. Participants were asked to record their discomfort levels on a visual analog scale numbered from one to nine, with one representing no pain and nine representing severe pain. The results of patient perception of discomfort through the analog visual scale were compared for post-cleaning and shaping appointments and for post-obturation appointments. Any intra-operative problems and the over or under filling of canals were recorded for each patient and compared with the results of the visual analog pain scale recordings.

The authors reported that patients had significantly less pain after root canal obturation appointments (5.8 per cent) than after cleaning and shaping appointments (21.8 per cent). The comparison of visual analog pain scores for all patients revealed that there was no significant difference in postoperative discomfort for any of the medications in the study including the placebo.

There was no statistical relationship found between over or under filling a canal and the degree of postoperative discomfort.

The authors conclude that there is no statistically significant relationship between the administration of the medications used in this study and the degree of post-operative endodontic discomfort.

Torabinejad M. et al. *J Endo*; 20:427-431, 1994.
Reprinted with the permission of *The Dentaletter*, Vol. 12, No. 10.

JOURNAL

February/
Février
1995
Vol. 61
No. 2



CASCADE. UNCOMPROMISED SOLUTIONS FOR DENTISTRY.

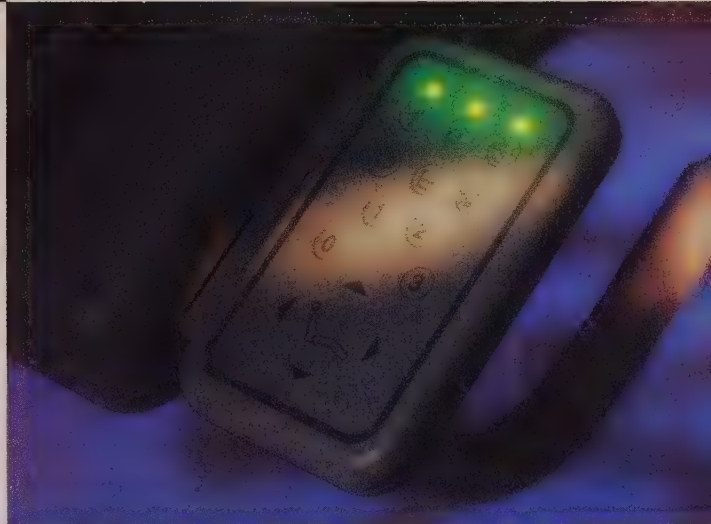


INNOVATIVE

The smooth, rounded shapes of Cascade® dental equipment only touch the surface of meeting our cleanability standards. Automatically recessed chair armrests reduce touch surfaces and potential for cross contamination. A-dec's built-in self-contained water system option lets you control water to your patient's oral cavity. Our every effort is to lead the way.

SIMPLE

People here at A-dec love making your job simpler. With the Cascade Master™ Touch Pad, for instance, you can operate up to ten functions in one, cleanable touch surface. You can also centralize your range of motion. Work more efficiently. And focus more completely on your patient's care.



RELIABLE

You who have owned and used A-dec equipment over the years tell us that reliability is one of the reasons you continue to buy A-dec. Yet, even the best products occasionally require service. With intensive factory and field training, service documents and telephone support, your A-dec dealer service technicians are prepared for everything from installing the newest Cascade equipment to servicing the 1960's Micro Cart. You can count on lasting solutions from A-dec.



A-dec, Inc., P.O. Box 111, 2601 Crestview Dr., Newberg, OR 97132 USA
800-547-1883, Fax: (503) 538-0276. ©A-dec, Inc., 1995. All rights reserved.

You could be in Hong Kong.



And almost everywhere major investment opportunities await.

When you're contributing to your RRSP, you want to invest in the best markets the world has to offer.

These days, that includes Europe, the Pacific Basin countries, and smaller emerging markets around the world.

Now you have access to these promising markets through the CDA RSP - with exceptionally low management fees of less than 1.5 per cent.

Introducing Four International CDA Funds

The comprehensive CDA RSP now offers 10 funds,

including the Pacific Basin Fund, European Fund, Emerging Markets Fund, and International Equity Fund.

Investing in these international funds improves your portfolio two ways. You increase your portfolio's potential rate of return, by taking advantage of well-performing markets around the world. And you further diversify your portfolio, which reduces your overall risk.

So call a Retirement Services Administrator at CDSPI and find out more. We'll have you in Hong Kong in no time.



CDSPI

CANADIAN DENTAL SERVICE PLANS INC.

100 Consilium Place, Suite 710
Scarborough, Ontario M1H 3G8

Toll-free 1-800-561-9401

Metro Toronto (416) 296-9401

Extension: 253, 254 or 255



CANADIAN
DENTAL
ASSOCIATION
L'ASSOCIATION
DENTAIRE
CANADIENNE

FINANCIAL PROGRAMS DESIGNED BY DENTISTS FOR DENTISTS

The Modular Dental Management System, EXCEL, is endorsed by CDSPI. For information contact Zadall Systems Group Inc. Telephone 1-800-663-1236

ANNOUNCEMENTS

National Highlights

March 2-4: B.C. Dental Meeting to be held in Vancouver B.C.

Contact: Marilynne Webster (604) 736-3645

April 7-8: Interim Meeting of the CDA Board of Governors 1-800-267-6354

May 11-13: Newfoundland Dental Association Meeting to be held in St. John's, Nfld. (709) 579-2362

May 11-13: ODA Annual Spring Meeting to be held in Toronto, Ont. (416) 922-3900 ext. 346

May 25-28: Alberta Dental Association Annual Meeting to be held in Jasper, Alta.

Contact: Dr. Dave Scott (403) 492-2014

May 26-27: New Brunswick Dental Society Annual Meeting to be held in Moncton, N.B. (506) 452-8575

May 27-31: Les Journées dentaires du Québec to be held in Montréal, Qué.

Contact: Nicole Pagé or Ginette Boutin (514) 875-8511 Fax: (514) 875-1561

May 30: 24e Congrès annuel de l'Ordre des Dentistes du Québec to be held in Montréal, Qué. (514) 875-8511

June 9-10: Nova Scotia Dental Association Annual Meeting to be held in Digby, N.S.

Contact: Mr. Steve Jennex (902) 420-0088

March/Mars 1995

March 1-4: Australian & New Zealand Association of Oral and Maxillofacial Surgeons, XVIth Biennial Clinical Conference, Towards 2000: Form & Function, being held at the Park Grand Hotel in Sydney, Australia. For information contact: ANZAOMS Conference 1995, Professional Centre of Australia, Private Bag No. 1, Darlinghurst, N.S.W. 2010. Tel.: 61-2-331 6920 or Fax: 61-2-331 7296.

March 2-4: Academy of Osseointegration's 10th Annual Meeting to be held in Chicago, Ill. For more information contact: Academy of Osseointegration, 401 N. Michigan Ave., Chicago, Ill., 60611-4267, U.S.A.

March 8-12: 24th Annual Meeting of the American Association for Dental Research (AADR) in conjunction with the **19th Annual Meeting of the Canadian Association for Dental Research** will be held at the San Antonio Convention Center in San Antonio, Texas. For further information contact Linda T. Hemphill, IADR Press Officer, (202) 898-1050, or Dr. John Rugh, AADR President, (210) 567-3515.

March 13-19: The Annual Dental Meeting of the Finnish Dental Society to be held in Helsinki, Finland. For information contact: Ms. Taru Ohtola, The Finnish Dental Society, Rautatieläisenkatu 6, SF-00520, Helsinki, Finland. Tel.: (358) 0-1502-418 or Fax: (358) 0-3-317.

March 16-18: Academy of Sports Dentistry in Anaheim, Calif. For information contact Dr. Art Wood, 1553 Randor Dr., Mississauga, Ont., L5J 3C6. Tel.: (905) 823-2008 or Dr. Frank Stechey, 202-151 York Blvd., Hamilton, Ont., L8R 3M2. Tel.: (905) 577-0770 or Fax (905) 577-0721.

March 18-22: 28th Australian Dental Congress to be held in Hobart, Australia. For information contact: Ms. Beth Pocock or Ms.

Sally Philpott, Mures Convention Management, Victoria Dock, Hobart, Tas 7000. Tel: (002) 312 121 or Fax: (002) 344 464.

March 25 - April 1: 35th International Alpine Dental Conference to be held in Courchevel, France. For more information contact: The International Dental Foundation, 53 Sloane St., London SW1X 9SW, U.K. Tel.: 44 (0) 71-235-0788 or Fax: 44 (0) 71-235 0767.

April/Avril 1995

April 1-7: Academy of General Dentistry, British Columbia Chapter's Continuing Education Conference to be held in Whistler, B.C. For information call 1-800-933-1339 or Fax (604) 576-5738.

April 7-8: Southern Ontario Surgical Orthodontic Study Group meeting in Windsor, Ont. For details contact Dr. Jeff Berger. Tel.: (519) 258-2632 or Fax: (519) 258-2637.

April 26-30: 42nd Annual Meeting of the Canadian Society of Forensic Science. For information contact: Dr. Joel Mayer, Centre of Forensic Sciences, 25 Grosvenor St., Toronto, Ont. M7A 2G8. Tel: (416) 314-3159 or Fax: (416) 314-3225.

April 28: Dental Nutrition Course to be held in Thornhill/Markham, Ont. This six-hour continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ont.) 1-800-937-6878.

May/Mai 1995

May 3-8: American Academy of Cosmetic Dentistry, 11th Annual Scientific Session to be held in Orlando, Fla. at the Hyatt Regency Grand Cypress Resort. For more information contact: AACD Executive Office at 1-800-543-9220 or write to: AACD, 270 Corporate Dr., Madison, Wis. 53714, U.S.A.

JOURNAL

February/
Février
1995
Vol. 61
No. 2

May 4, 5 and 12: Dental Nutrition Course to be held in Vancouver, B.C., London, Ont., Victoria, B.C. and Toronto, Ont. This six-hour continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ont.) 1-800-937-6878.

May 5-7: Canadian Academy of Periodontology Annual Convention to be held in Toronto. For information contact Sharon Bangham, CAP Central Office, 1815 Alta Vista Dr., Ottawa, Ont. K1G 3Y6. Tel: (613) 523-3876.

May 20-24: European Begg Society of Orthodontics, 17th Congress to be held in Chester, U.K. For information contact Geoff Budd, Brookside, 35 Warwick Park, Tunbridge Wells, Kent. TN2 5TA U.K.

June/Juin 1995

June 1-3: BDA Annual Conference "Success in Practice" to be held in Birmingham, England. For more information contact: Linda Wallace, British Dental Association, 64 Wimpole St., London W1M 8AL, England. Tel: (71) 935 0875 or Fax: (71) 487 5232.

June 8: Dental Nutrition Course to be held in Burnaby, B.C. This six-hour continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ont.) 1-800-937-6878.

June 8-11: 5th International Symposium on Periodontics and Restorative Dentistry to be held in Boston, Mass. For more information contact: Quintessence Publishing Co. Inc., 551 North Kimberly Dr., Carol Stream, Ill. 60188. Fax: (708) 682-3288.

June 12-15: 1995 Roentgen Centenary Congress and Historical Exhibition to be held in Birmingham, U.K. For more information contact: Miss V. Whitehead, Conference Office, British Institute of Radiology, 36 Portland Place, London W1N 4AT, U.K.

June 28 - July 1: International Association for Dental Research — 73rd General Session and Exhibition to be held in Singapore. For more information contact: E. Gwynn Breckenridge, Director of Scientific Meetings, 1111 Fourteenth Street N.W., Suite 1000, Washington, D.C. 20005, U.S.A. Tel: (202) 898-1050 or Fax: (202) 789-1033.

June 29 - July 3: XII International Congress on Oral & Maxillofacial Surgery to be held in Budapest, Hungary. For more information contact: Prof. G. Szabo, Dept. of Oral & Maxillofacial Surgery, Semmelweis University of Medicine, H-Budapest VII, Maria U. 52, Hungary.

August/Août 1995

August 23-26: XV World Congress — International Congress of Oral Implantologists to be held in San Francisco, Calif. For more information contact: R. Craig Johnson, 248 Lorraine Ave., Upper Montclair, N.J. 07043, U.S.A. Tel.: (201) 783-6300 or Fax: (201) 783-1175.

September/Septembre

September 15-16: The American Dental Association, Michigan Dental Association and West Michigan Dental Society are proud to celebrate during 1995 the 50th Anniversary of Community Water Fluoridation in the United States. An international symposium on community water fluoridation will be held at the Van Audel Center in Grand Rapids, Michigan. For more information contact: Dr. Arnold Morawa or Ms. Debbie Montague, University of Michigan School of Dentistry, 1011 N. University Ave., Ann Arbor, Michigan 48109-1078. Tel: (313) 764-6856 or Fax: (313) 936-3065.

October/Octobre 1995

October 4-6: 58th Annual Meeting of The American Association of Public Health Dentistry — Call for Abstracts. The AAPHD is invit-

ing papers on a broad range of dental public health topics for presentation at its annual meeting. The theme of this year's meeting is "Oral Health: The Primary Care and Prevention Model." Deadline for submission is May 1, 1995. For further information contact AAPHD National office, 10619 Jousting Lane, Richmond, Va. 23235-2828. Tel: (804) 272-8344 or Fax: (804) 272-0802.

October 7-11: 136th Annual Session of the American Dental Association to be held in Las Vegas, Nev. For more information contact: American Dental Association, 211 E. Chicago Ave., Chicago, Ill., 60611, U.S.A. Tel.: (312) 440-2658 or Fax: (312) 440-2707.

October 20-21: Southern Ontario Surgical Orthodontic Study Group Meeting to be held in Windsor, Ont. For details contact Dr. Jeff Berger at (519) 258-2632 or Fax: (519) 258-2637.

October 31 - November 4: Centenary Congress — 28th International Dental Meeting to be held in Buenos Aires, Argentina and sponsored by the Asociación Odontológica Argentina. For more information contact: Dr. Guillermo Pisarenko, president, Junin 959, (1113) Buenos Aires, Argentina. Tel: (1) 961-6141 or Fax: (1) 961-1110.

November/Novembre

November 15-17: Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00 or Fax: (8) 662 58 42.

November 27-28: American Board of Oral and Maxillofacial Radiology 1995 — Certifying Examination. Applications must be submitted by May 15, 1995. For further information please contact Dr. Curtis Lundeen, School of Dentistry — Oral Radiology, Oregon Health Sciences University,

Continuing Education

University of Toronto

March 3, 1995: Retreatment of Endodontic Failures — Why, When and How? This course is presented by Dr. Shimon Friedman, head of the endodontic department at the faculty of dentistry, University of Toronto.

April 28, 1995: Endodontic Microsurgery — The State of the Art. This course is presented by Dr. Joel Edelson and the endodontic department staff, with the participation of Dr. Syngcuk Kim, chairman of the endodontic department at the University of Pennsylvania School of Dental Medicine.

June 9, 1995: Participation Course — Advanced Endodontic Technique. This hands-on course is presented by Dr. Shimon Friedman and Dr. Wayne Pulver, with the participation of endodontic department staff, postgraduate residents and invited guests.

*For more information contact:
Continuing Dental Education
Office*

*Faculty of Dentistry
University of Toronto
124 Edward St.
Toronto, Ont.
M5G 1G6*

Tel: (416) 979-4902 ext. 4503
or 4590
or Fax: (416) 979-4941

Dalhousie University

March 4, 1995: Preventive Dentistry and Managed Care. With Dr. Amid I. Ismail and Dr. Peter M. Pronych. The purpose of this course is to review the scientific

evidence and guidelines for the provision of appropriate prevention in the dental office, concentrating on the diagnosis and prevention of dental caries, and periodontal diseases.

March 25, 1995: Temporomandibular Pain Disorders and Related Pain Syndromes. With Dr. Steven Ahing. The course will review basic science concepts and recent information on classification of RM disorders; TMJ anatomy and physiology and neurobiology of chronic pain in order to generate a flexible practice model for general dental practitioners.

April 22, 1995: Hot Topics in Restorative Dentistry. With Dr. Richard Price. He will present the latest information and review bonded amalgams, the new dentin bonding systems, new materials to restore Class V lesions, impression materials, and home bleaching.

May 13, 1995: Maxillary Complete Dentures vs Natural Dentition/Anatome — "Anatomy of a Smile." With Dr. Robert Brygider. This presentation will explore some of the resultant problems and pathologies associated with the clinical conditions and will seek to offer modifications to the treatment process.

*For more information contact:
Continuing Dental Education
Faculty of Dentistry
Dalhousie University
Halifax, Nova Scotia
B3H 3J5*

Tel: (902) 494-1674
or Fax: (902) 494-2527

Ontario Dental Association

March 24, 1995: Pediatric Dentistry Update presented by Dr. David J. Kenny.
Location: North Bay, Ont.

April 1, 1995 Clinical Pharmacology Update presented by Dr. Rebecca Yacobi.
Location: Chatham, Ont.

April 1, 1995: Fixed Prosthodontics (Lecture Only) presented by Dr. Bruce Glazer.
Location: Renfrew, Ont.

April 2, 1995: TMJ Splint Workshop presented by Dr. John D. Marotta.
Location: London, Ont.

April 8, 1995: Orofacial Pain: A Diagnostic Dilemma presented by Dr. Dale Miles.
Location: Ottawa, Ont.

April 29, 1995: Oral Surgery presented by Dr. Stephen Fitch.
Location: Etobicoke, Ont.

May 5, 1995: Current Concepts in Emergency Pain and Anxiety Management presented by Dr. Michael Saso.
Location: Windsor, Ont.

*For further information contact:
The Ontario Dental Association
Professional Development
4 New St.
Toronto, Ont.
M5R 1P6*

Phone-in Registrations:
1-800-387-1393 ext. 304
or Fax: (416) 922-9005

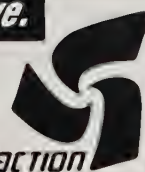
611 S.W. Campus Dr., Portland, Ore. 97201-3097. Tel: (503) 494-8930.

December/Décembre 1995

December 25 - January 1, 1996:
Alpha Omega International Den-

tal Fraternity — Annual Convention to be held in Tarpon Springs, Fla. For more information contact Stephanie Block, executive director, 206-1314 Bedford Ave., Baltimore, Md., 21208 U.S.A., (410) 602-3300 or 1-800-677-8468.

Make your move.



PARTICIPATION

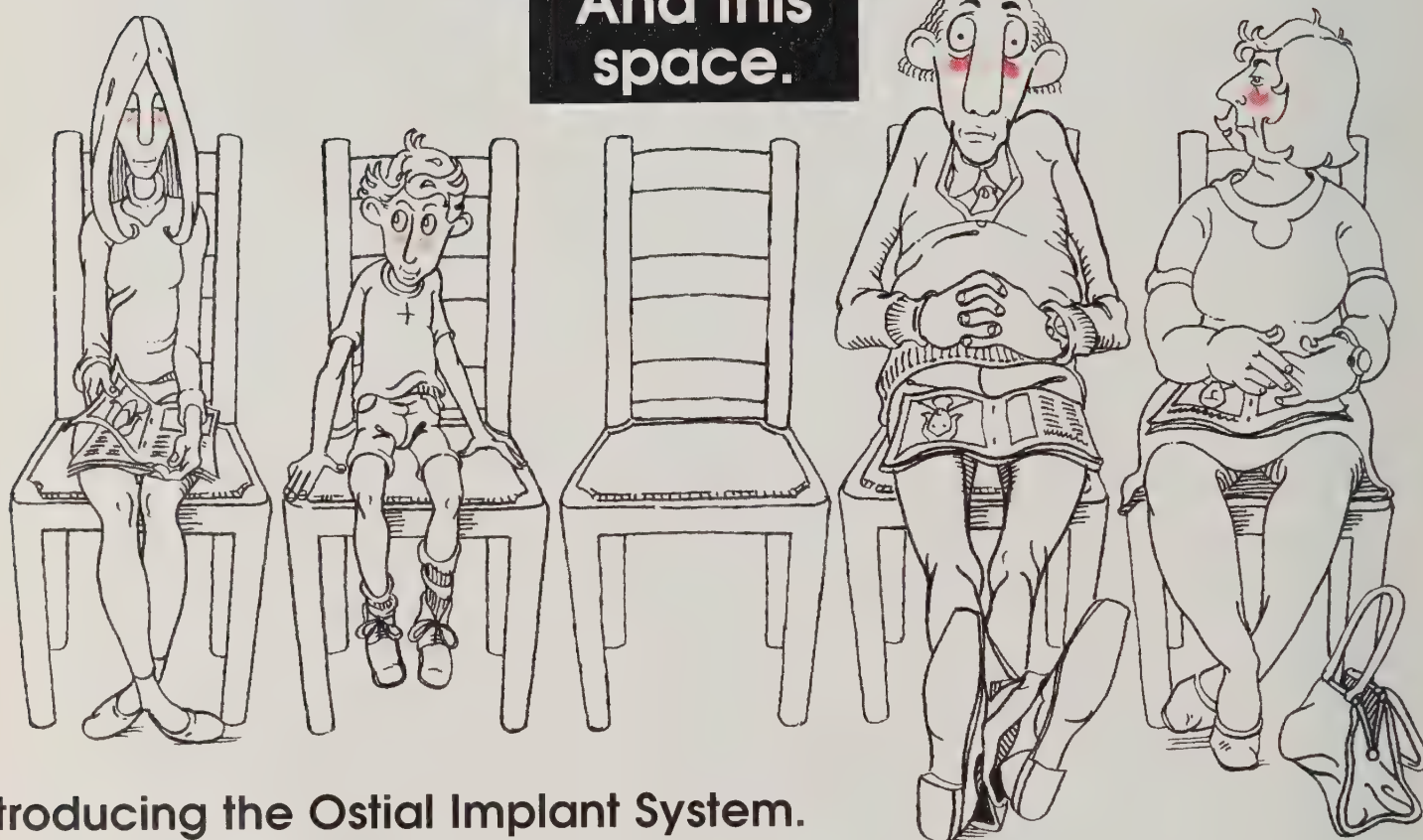
JOURNAL

February/
Février
1995
Vol. 61
No. 2

At last, an affordable, uncomplicated implant system to help you fill this space.



And this
space.



Introducing the Ostial Implant System.

Hoechst-Roussel Canada is pleased to introduce Ostial, an affordable, innovative new implant system.

The Ostial Implant has a conical shape for optimum load distribution and a coarse thread design for ease of placement.

Ostial was developed here in Canada and its design is patented.* Training courses will be offered in selected centres and will qualify for Continuing Education credit points.**

For more information, call Michiel Verburg, Product Manager, at 1-800-363-1871 ext.3712 or contact your Hoechst-Roussel representative.

Ostial *Simple.
Affordable.
Innovative.*

Hoechst-Roussel Canada Inc.

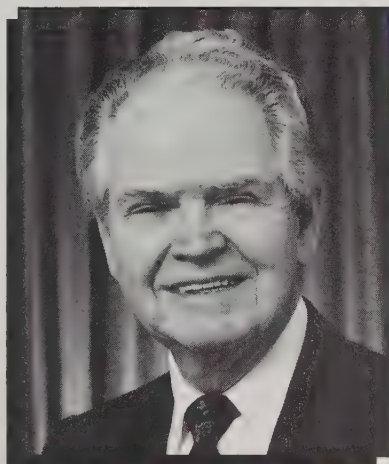
*Canadian patent #1248371 issued.

**For an up-to-date listing, contact HRCI.

The successful outcome of any implant procedure is directly related to proper surgical and prosthetic technique.

EDITORIAL

MET ANY MILLIONAIRES LATELY?



Dr. P. Ralph Crawford,
Editor

Newspapers today seem to have a year-end obsession with reporting on the salaries and incomes of North America's rich and famous. And as 1994 drew to a close, there was no shortage of news. With both hockey and baseball players either locked out or on strike, depending which side you listened to, we've been inundated with stories on their multimillion dollar salaries. But just down the page, we're reading tales of woe from the team owners, one of whom is threatening to sell his club because he's lost \$10 million in two years.

The world of the silver screen was also in the headlines, with a story on the record-breaking \$20 million contract that Sylvester Stallone signed with Savoy Pictures.

Closer to home, while Canadian consumers engaged in a year-end struggle to balance their cheque books, several banks announced annual profits in excess of \$1 billion. The public's interest — or dismay — was further piqued by the news that two Canadian bank presidents enjoyed annual salaries and bonuses that topped the \$2.6 million mark. But even these figures are dwarfed by the total annual income amassed by the chairman of Magna International — including salary, bonus,

consulting and stock options — which exceeded \$40 million.

In the midst of all the hoopla on record breaking salaries, I came across an article in the December 24, 1994, *Financial Post* entitled, "Canadians Starting to Live Within Their Means." It seems that for the first time since the Second World War, the take-home wages of Canadians are actually falling — despite a 4.8 per cent expansion in the real gross domestic product.

Frankly, I get confused. How can we justify a proliferation of gigantic incomes for a select few when the vast majority of Canadians are struggling to make ends meet with less and less money. But then I never did excel in Economics 101.

As a child of the great depression, I was schooled in country-boy economics. Rule one: you never spend more money than you earn. Rule two: money can't buy you happiness. To this day, I try hard to adhere to the first golden rule. But despite the training I received from my mentors along the way, and a lifetime of living within my means, I've never satisfactorily answered one basic question: "Money can't buy happiness, but if I'm going to be miserable, I'd sooner be rich and miserable than poor and miserable."

My personal interest (greed?) in the millionaire club was re-ignited recently when I received a sweepstakes package from one of those magazine publishing houses. In big bold black letters, it blared out the wonderful news: **"It's Confirmed — You're Our New \$10,000,000 Winner."** Oh, the excitement in our house! What we could do with all that money. We had been looking with interest at a new \$10 million home that's going up about a mile from where we live. Now we could own one too.

The next morning, much to my disappointment, I found that everyone else in our office had received the same letter. One concerned co-worker was kind enough to warn me, "Don't quit your job, yet."

All this news about millionaires got me thinking about dentistry and million dollar incomes. But first I needed a definition — what actually is a millionaire? Is it someone who has an earning capacity of a million

dollars or more in a year? Is it someone who has a net worth of a million. Or does it refer to someone who can write a cheque, just like that, for a million dollars.

In fact, there doesn't seem to be a consensus on what actually defines a millionaire. So I decided to consider only those dentists who could come up with a million dollars tomorrow — if really pressed into it. And surprisingly enough, I knew a few. At least two (maybe three) of the dentists on my list had married into millions. A couple had inherited a great deal of money, one had won a lottery, and a few had invested wisely in the stock market, real estate and oil wells, while one had made it big-time in the dental manufacturing industry. But I couldn't think of a single dentist who earned a net annual million dollar income from their practice.

The latest Statistics Canada figures (1991) reveal that the average annual income for dentists is \$95,776. We know that many dentists earn more than this in a year, but there are also those who earn much less.

Wealth is somewhat relative. To Magna's chairman, \$95,776 is probably pocket change. But to the single mother serving hamburgers in a fast food restaurant, it would probably be a small fortune.

Dentists will probably never make it into the million dollar club. The average dentist, providing treatment to the average patient and billing the fee guide, simply cannot earn a million dollars a year.

I deem this to be neither a disappointment nor a problem. The amount we earn really doesn't matter. What counts is our quality of life — are we happy and satisfied with our work? Do we have an enjoyable lifestyle? Can we provide for our families? Isn't that where true happiness lies?

Or as my father used to put it, "When you pass from this world, will it be just a little better place because of the effort you put forth to make life worthwhile?"

P. Ralph Crawford, BA, DMD
Editor of the Journal of the
Canadian Dental Association

JOURNAL

February/
Février
1995
Vol. 61
No. 2

SYSTEMS FOR SUCCESS

"Tetric allows me to reproduce beautifully the esthetics of adjacent teeth."

PAUL BELVEDERE, D.D.S.

"I use Tetric because of its unique patented fluoride release, a property that distinguishes it from a vast field of hybrid composites."

WILLIAM G. DICKERSON, D.D.S.

REAL

UNIQUE

easy

"I find myself using Tetric more and more – its easy handling makes it extremely user-friendly."

LARRY ROSENTHAL, D.D.S.

creative

"With Tetric's excellent opacity, translucency and shade variety, I can duplicate the anatomy and luminescence of natural teeth."

DAVID HORN BROOK, D.D.S.

TETRIC™

UNIVERSAL MICROHYBRID

IVOCLAR VIVADENT
IVOCLAR NORTH AMERICA, INC.

For more information on this or any other products in our system, or to place an order, call us toll free at 1-800-5-DENTAL in the U.S., 1-800-263-8182 in Canada.

PRESIDENT'S COLUMN

DENTAL EDUCATION



Dr. Bryun Sigfstead,
President

With hospital beds closing across the country, governments decrying the costs of universal health care, and university tuition fees poised to increase dramatically, it's clear that Canada's extensive system of social programs is in jeopardy.

While most Canadians agree that the nation must take steps to put its financial house in order, and bring the current debt crisis under control, many are reluctant to see Canada's vaunted social safety net disappear. It's a sensitive issue for all of us, regardless of whether we view Canada's social programs as a sacred trust or as a privilege.

But the belt-tightening that we've endured for the last five years or so may be mild compared to what's coming. And like it or not, the dental profession will undoubtedly feel the pinch.

In fact, we may have already had a taste of what the future holds in store. Since 1991, the dental profession has witnessed the near closure of three of Canada's 10 dental faculties. McGill University, faced with a deficit of \$77 million, announced in July 1991 that it would close its faculty of dentistry in the spring of 1995. Subsequently, the university agreed to

maintain the faculty if it could meet nine conditions, which included securing private donations for the acquisition of new dental chairs and associated equipment.

Then it was Saskatchewan's turn. In March 1993, the University Program Review Panel recommended that the Saskatchewan government and the university consider the possibility of "buying" dental-school space from other provinces. If this approach proved feasible, the panel proposed that Saskatchewan's own dental faculty should be phased out, and that dental students should be sent out-of-province to pursue their studies. Although this scenario now seems unlikely, the future of Saskatchewan's dental faculty remains uncertain.

Now Alberta's dental faculty is facing closure, unless a unique plan involving the separation of the faculty's clinical and academic functions is successful. Under the new structure, the academic portion of Alberta's dental program will be contained within a proposed faculty of oral health sciences, while the clinical portion will be provided through a self-supporting oral health centre. Time will tell if this approach is workable, but it has satisfied the university's need to cut costs.

In fact, education costs have always been a shared responsibility in Canada. All of us pay school and property taxes, regardless of whether we have school-age children. And a significant portion of our federal and provincial taxes go toward subsidizing postsecondary education.

But the balances are changing. Governments across Canada, in an effort to reduce deficit spending, are now saying that they can no longer afford to provide massive subsidies to education. More and more, the onus is falling on the individual to pick up the costs, and universities are being told to cut expenses or face the consequences.

The results have been two-fold — tuition fees are going up and expenses are being slashed. Unfortunately, with the mentality of cost cutting rapidly taking hold in Can-

ada, dental faculties have become extremely vulnerable. It's easy to see why. Not only are they very expensive to operate, they also involve only a small number of students and are relatively isolated from other faculties.

But is closing dental faculties really the best answer to the budget crunch facing Canadian universities? I don't think so. This country has established a reputation as a leader in dental science, and Canadian dentistry is respected around the world. Furthermore, there is still a recognizable need for dentists in Canada, particularly in non-urban areas.

It would, however, be short-sighted to hide our heads in the sand and ignore the economic reality facing dental education in this country. Clearly, we need to weigh the demand for dental professionals in Canada against the number of new graduates coming out of our universities. And we may ultimately find that some consolidation is necessary.

Education lies at the very heart of dentistry. As guardians of the profession, we must be concerned not only about the possibility of future closings, but also about the restructuring taking place in Canada's dental faculties and the impact it will have on the quality of dental education in this country. Fortunately for dentistry, the Commission on Dental Accreditation of Canada is well-equipped to perform this task, and they do it extremely well.

CDA is also taking a leading role in setting the future direction of dental education in Canada. We are currently involved in two very important initiatives — a task force on dental education and a national manpower study.

Together we can and will preserve our dental faculties, and ensure the future of dental education in Canada.

*Bryun Sigfstead, DDS
President of the Canadian Dental Association*

JOURNAL

February/
Février
1995
Vol. 61
No. 2

FOR THE DENTIST WITH A THRIVING PRACTICE
TWO PRACTICE MANAGEMENT TRAINING COURSES ON AUDIO-VIDEO CASSETTES



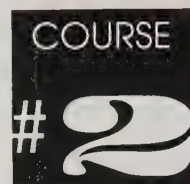
ZERO BROKEN APPOINTMENTS

DESIGNED for the entire dental team, ZERO BROKEN APPOINTMENTS provides a strategic management response to the problem of broken appointments in the dental office.

- ✓ *FIND OUT* what you can do to stop the abuse.
- ✓ *DISCOVER TECHNIQUES* that could save your practice thousands of dollars & your staff untold stress.
- ✓ *MAKING APPOINTMENTS* will never be the same.

THE AGENDA:

- Common MISTAKES that most offices make
- 6 MAJOR REASONS WHY patients break appointments
- The proper way to schedule ALL appointments
- The C.W.P. TECHNIQUE
- Effective communications with the CANCELLATION PATIENT
- BOUNTY-HUNTING the no show patient
- Why some COLLECTION policies lead to broken appointments
- The special problem posed by EMERGENCY patients
- The critical DIFFERENCE between appointing & scheduling
- CYA documentation & the RETAINER program
- The importance of new patient INDOCTRINATION
- How to effectively handle PRIME-TIME appointments
- Should we CONFIRM appointments?
- Should we CHARGE for broken appointments?
- How to effectively MONITOR broken appointments
- HOT BUTTON phraseology and scripts
- Doctor intervention & the WHIPPING POST



RECALL PATIENT MAXIMIZATION

DESIGNED for the entire dental team, RECALL PATIENT MAXIMIZATION shows you how to maximize the potential value of the recall patient in your dental practice.

FIND OUT what you can do to:

- ✓ Maximize recall patient retention
- ✓ Maximize New Patient referrals from recalls
- ✓ Maximize treatment acceptance by recalls

RECALL PATIENT MAXIMIZATION will also show you how to activate inactive recalls with POWERFUL PHONE TECHNIQUES.
THE DIFFERENCE for you is the bottom line.

THE AGENDA:

- The GOOD, the BAD, the UGLY of recall systems
- Why some patients FALL BETWEEN THE CRACKS?
- The recall system as STEP CHILD
- The NEHRU classification of patients
- Program introduction & new patient RETENTION
- ACTIVATING INACTIVES – when to call-who should call?
- TELEMARKETING GUIDELINES – developing a patient focused & service-oriented office image
- PHONE ACTIVATION SCRIPTS – what to say & what not to say?
- SELLING modern dentistry to recall patients
- Hygiene dept. 4 PRIORITIES
- Recall-new patient referrals & the LAW OF 144
- When PRE-APPOINTING leads to BROKEN APPOINTMENTS
- The CLUSTER hygiene technique
- Techniques for the ADVANCED office-the FREQUENT FLYER PROGRAM

Instructional Tapes Order Form

ZERO BROKEN APPOINTMENTS (3 hours)

- ☐ AUDIO \$125
☐ VIDEO \$175

RECALL PATIENT MAXIMIZATION (3 hours)

- ☐ AUDIO \$125
☐ VIDEO \$175

BOTH INSTRUCTIONAL TAPES (6 hours)

- ☐ AUDIO \$225
☐ VIDEO \$325

*“MAKING APPOINTMENTS WILL NEVER BE
THE SAME. OVER 5,000 COPIES SOLD.
ORDER YOUR COPIES OF THESE
TAPE CLASSICS TODAY”*

NAME _____

ADDRESS _____

CITY _____

PROVINCE _____ ZIP _____

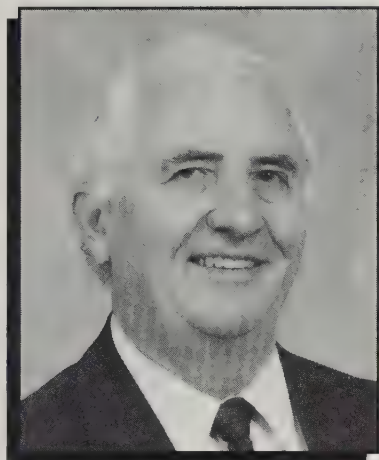
PHONE () _____

✓ CHECK ENCLOSED FOR \$ _____ (CDN. FUNDS)
(NO CHARGE FOR SHIPPING & HANDLING)

✓ MAIL THIS ORDER FORM WITH YOUR CHECK TO:

SHEPPARD MANAGEMENT
P.O. BOX 30054
CLEVELAND, OHIO 44130
(216) 267-5938

Academy of General Dentistry (AGD)
Approved National Sponsor



Introducing the New President of CDSPI

On January 14, 1995, Dr. James Wright, formerly the secretary of the Canadian Dental Service Plans Inc. (CDSPI) management committee, assumed the elected position as president of CDSPI.

Dr. "Jim" Wright's election was the latest significant achievement in a long line of personal successes.

When he studied dentistry at the University of Alberta in the early 1950s, Dr. Wright may have envisioned himself enjoying a future in a comfortable downtown office, building up his practice, and perhaps furthering his education over the years.

Would he have believed it if someone had told him he'd serve as a dental officer aboard a ship and spend a year at sea? Or live in Egypt, advising a United Nations emergency force? Or become Brigadier General for the Canadian Forces Dental Services?

Maybe not, but Dr. Wright has done all of this and much more. His career path has taken him along three different avenues — academia, organized dentistry, and the military — and in each one he has assumed a leadership position.

In 1986, Dr. Wright accepted a position as professor and head of the department of stomatology at the University of Manitoba, was appointed as associate dean of the faculty of dentistry in 1990, and

currently holds the prestigious position of dean of the faculty of dentistry.

In the military, he travelled a long and winding road, starting as dental officer aboard the ship HMCS Ontario, then — on land — becoming an instructor at the Canadian Forces Dental Services School (CFDSS), and quickly rising up the ranks: periodontics department head, base dental officer, commandant of the Canadian Forces Dental Services School, director of dental treatment services, and ultimately brigadier general and director of the Canadian Forces Dental Services.

In organized dentistry, Dr. Wright served on the board of governors of the Canadian Dental Association from 1981 to 1986, and was the Ontario representative on CDA's executive council from 1985 to 1986. Among his many accomplishments in organized dentistry was his post as a commission chairman of the World Dental Federation (FDI).

A Decade with CDSPI

Dr. Wright has been involved with CDSPI for 10 years, beginning as CDA's representative on CDSPI's board, a post he held from 1984 to 1989. He joined the CDSPI management committee in 1990, and is now CDSPI's president.

As the president of CDSPI, Dr. Wright's goal is to emphasize the organization's fundamental strengths, not to take CDSPI in a new direction — he wants to ensure that CDSPI continues to do what CDSPI does best.

"The number-one reason why CDSPI exists is because dentists have special needs," Dr. Wright states. "I've been involved with CDSPI for 10 years because I strongly believe there should always be specialized insurance and investment services just for dentists, controlled by the dental profession itself.

"CDSPI is already doing an excellent job. Just ask the dentists who use CDSPI and know us well — they have high praise for our programs and services. The trouble is, a large number of dentists don't understand how we function and what we are. I'd like for those dentists to get to know us better. The more they know about CDSPI, the more they'll realize why CDSPI is their best choice, and they'll benefit from financial programs designed just for them.

"For example, many dentists think CDSPI is an entity unto itself. But CDSPI is owned by the CDA and nine provincial dental associations, which really means that CDSPI is owned by the dentists of Canada," Dr. Wright explains. "When a dentist needs insurance or investment services, he or she

should look to a member of the family, which is exactly what CDSPI is."

The Importance of Loss Prevention

"One particular interest of mine is loss prevention — steps dentists can take to minimize risk and reduce insurance claims. I'm especially interested in decreasing long-term disability claims, and frankly, about decreasing the number of suicides and drug related problems. In recent times, such problems as the vast changes in the economy and a greater degree of litigation have caused our stress levels to increase at an alarming rate. We must all ask what we can do to better understand this problem and how we can best react. Certainly, one part of the solution is CDSPI's recently introduced Members' Assistance Program, which provides eligible dentists and their families with personal counselling on a confidential basis. Of course, fewer dollars going to claims reduces the chance of rate increases, but my primary interest is concern for the health of all members of the dental profession."

Another area that is very important to Dr. Wright is how CDSPI responds to dentists' changing needs. He sees exciting times ahead, and views evolution as one of the organization's fundamental characteristics.

"I think that anyone who looks at the development of CDSPI has to be impressed with the continued improvements in both the quality of service and the scope of programs which have been brought to the dental profession.

"That's a trend that will be maintained. We will constantly seek further ways to improve our service. Continued diversification of products is also important so dentists can benefit from 'one-stop shopping,' but, of course, we will only offer products which are as good as or better than others in the marketplace.

"In fact, we'll also examine the whole CDSPI organization to determine whether we can imple-

ment changes to make CDSPI even more efficient, even more responsive to dentists' needs."

In summary, Dr. Wright says, "I intend to carry on the strong leadership evident in the past and to continue the tradition of teamwork. We are a team which includes a board of directors, management committee, and 45 dedicated employees working out of our Scarborough, Ontario, office — all bringing our specific areas of experience and expertise to CDSPI.

"Together we will continue building on our strengths, and help ensure that CDSPI remains a vibrant organization that offers the best insurance and investment programs available to the dental profession in Canada." ■

DID YOU KNOW?

Imagination was given to man to compensate him for what he is not; a sense of humor, to console him for what he is.



GIVE SOMEONE A SECOND CHANCE.

March is Kidney Month. Please give generously.

THE KIDNEY FOUNDATION OF CANADA

CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	* Unit values at		12 Month Return %
	December 31, 1994	November 30, 1994	
Bond & Mortgage Fund	11.20352	11.25172	-3.5%
Common Stock Fund	23.03948	22.34476	-2.6%
Money Market Fund	69.13574	68.79649	4.7%
Balanced Fund	42.71952	41.71844	-1.6%
Aggressive Fund	8.74502	8.41535	N/A

G.I.C. Fund

Term	December 31, 1994	November 30, 1994
1 yr	7.25%	6.20%
2 yr	8.15%	7.20%
3 yr	8.15%	7.45%
4 yr	8.40%	7.70%
5 yr	8.65%	8.20%

(*Rates subject to change without notice.)

*Total Net Assets (market value) of the Plan as of:

(includes RRIF assets)	December 31, 1994	November 30, 1994
	\$186,162,038.00	\$183,896,073.00

For further information:



CDSPI

Write:

CDSPI
Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:

416-296-9401 Metro Toronto
1-800-561-9401 Service in English
Extensions:
252, 253, 254
1-800-665-9401 Service in French
1-416-296-8920 Fax.

NEWS UPDATE

Dentist Awarded Order Of Canada

Dr. Joseph Aubin Doiron, the 22nd Lieutenant-Governor of Prince Edward Island, was awarded the insignia of membership in the Order of Canada during a special ceremony last October in Ottawa.

The Order of Canada — with its motto of *Desiderantes meliorem patriam* (they serve a better country) — was established in 1967 to recognize those who have made significant contributions to Canada.

Dr. Doiron is a past-president of the Prince Edward Island Dental Association, and served on the board of governors of CDA from

1971-76. Long interested in Acadian affairs, he is the founding president and chairman of the Acadian Mardi Gras Association and a charter member and president of the Acadian Museum Association.

Dr. Doiron was born in North Rustico, P.E.I., June 10, 1922. He earned his bachelor of arts at Saint Annes College in Church Point, Nova Scotia, and his dental degree from the University of Montreal.

Following his graduation in 1951, Dr. Doiron established a dental practice in Summerside, P.E.I. He retired from practice in 1980. ■



Dr. Joseph Aubin Doiron receives the insignia of membership in the Order of Canada from Governor General Ramon Hnatyshyn.

(Photo credit: Sgt. Bertrand Thibeault.)

Medical/Dental Hockey Tournament Held in Phoenix

The 8th annual "Calnor Cup" medical/dental hockey tournament was held in Phoenix, Arizona, November 9-13, 1994, with the Calgary Drillers emerging as the top dental team.

A medical team from Barrie, Ontario, won the overall championship.

The annual tournament provides an opportunity for dental and medical hockey teams from across Canada and the U.S. to get together for some friendly competition, as well as to play golf, socialize, and enjoy the Arizona desert. It also incorporates a continuing education component for interested practitioners.

Entries are now being taken for the November 1995 tournament. For more information, call John Tabachniuk of Calnor Group Tours in Calgary, at: (403) 299-1786. ■



The Calgary Drillers. Front row (l to r): Dr. Dan Meyer, Dr. Ken Mayer, Dr. David Lovick, Dr. Daryl Penner, Mr. Sheldon Dyck. Standing (l to r): Dr. Hugh Kennedy, Dr. Robert Harper, Dr. Tally Abougoush, Dr. Gerry Braunberger, Dr. Lance Couture, Dr. Joey Brown. Missing: Dr. Jeff Southam, Dr. Adam Mireault, and Dr. Kevin Kindley.

Canadian Dentists Inducted Into American College of Dentists

Fourteen Canadian dentists were among the 326 fellows inducted into the American College of Dentists during its 1994 annual meeting and convocation, held in New Orleans last October.

A non-profit organization with a membership of almost 6,500 dentists from around the world, the American College of Dentists was founded in 1920 to promote high ideals, ethical standards and quality education within the dental community.

The new fellows from Canada are: Dr. Stephan Brayton from Nova Scotia; Drs. John Blair, Phillip Greeves and George Rabon from Alberta; Drs. John Blomfield, Perry Goldberg, Howard Katz, Oleg Kopytov, David Kozloff and Roland Vallée from Quebec; Drs. Dennis Nimchuk, Charles Slonecker and Michael Wainwright from British Columbia; and Dr. Minna Stein from Toronto. ■

JOURNAL

February/
Février
1995
Vol. 61
No. 2

Bob Goes Trick or Treating in Montreal

An annual trick or treat party held in Montreal not only provides a unique opportunity for children to enjoy a safe and fun-filled Halloween, it also incorporates an educational component.

Organized by CJAD, a local radio station, Safe Halloween brings children to one central location, the Montreal Forum, which is transformed into a haunted village complete with witches, ghosts, goblins, eerie lights and spine-tingling music for the event.

Children walk from haunted house to haunted house collecting goodies — as well as safety and health tips — from different costumed characters, including CDA's Live Bob, local police and firemen, and Canadian Pacific Railway personnel.

In 1994, children and their parents were instructed about the value and techniques of proper oral hygiene by dental hygiene students and teachers from John Abbott College, and by Dr. Michael Wiseman and his staff.

All tickets to Safe Halloween are sold in advance, with proceeds going to Sun Youth, a charity that provides services to the needy. The Montreal Forum is provided free of charge for the event, which netted \$30,000 in 1994, and gave more than 15,000 children the time of their lives. ■



Smiling Bob and Dr. Michael Wiseman bring joy to a handicapped child during Montreal's Safe Halloween event.

Renowned Anaplastologist Retires

Mr. Raymond Allen, a renowned and highly respected anaplastologist (maxillo-facial prosthesis), recently retired from the division of dentistry, British Columbia Cancer Agency, after 34 years of service to patients from B.C. and across Canada.

Trained as a dental technician in Birmingham, England, Mr. Allen was appointed to the staff of the B.C. Cancer Institute in 1960, and soon began additional training as a radiation therapy technologist.

On graduation, Mr. Allen was qualified as both a certified dental technologist and as a radiation therapy technologist. Shortly thereafter, he undertook the construction of facial prostheses at the Cancer Institute, and has since devoted his skill, ingenuity and artistry to the rehabilitation of patients who are "esthetically challenged" as the result of cancer, trauma and congenital/developmental defects.

Aspects of his work have been published in two text books on radiation therapy, as well as in journals and in the proceedings of several meetings. Three years ago he was appointed president of the American Association of Anaplastologists. ■

Dr. Paul Massicotte Appointed Laurentians Dental Advisor

Dr. Paul Massicotte, the administrator of the Quebec Dental Surgeons Association (QDSA), has been appointed as the dental public health advisor for the Laurentian region.

The appointment was made by Dr. Jean Rochon, the minister of health and social services for Quebec.

Dr. Massicotte is one of only a few Quebec dentists to be certified in geriatric dentistry and possess a masters degree in public health

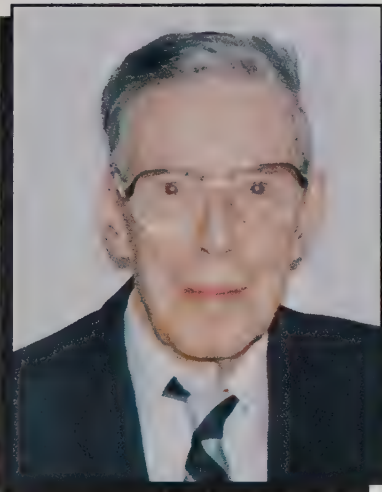
dentistry. In his new role, he will be involved in the development and management of public health programs, as well as dental health awareness. ■



February Library Package Now Available

CDA's February Library Package contains a unique series of articles on **intraoral cameras**. The package is available to CDA members at a cost of \$5, plus applicable taxes. To obtain your copy, call the Library at: 1-800-267-6354, ext. 223. ■

Obituary



Mr. Lloyd Bowen

Father of Fluoride Dies At Age 91

Mr. Lloyd Bowen, often referred to as "The Father of Fluoride in Canada," died January 8 in Toronto. He was 91.

In the early 1950s, Mr. Bowen joined the Health League of Canada to promote fluoridation, and was instrumental in the eight-year struggle to fluoridate Toronto's drinking water.

Mr. Bowen was hired as CDA's fluoridation officer in 1967, and immediately set to work on the first of eight annual surveys on the status of fluoridation in Canada. He held the position of fluoridation officer for 17 years, until his retirement in 1984 at the age of 81.

During his career with CDA, Mr. Bowen received numerous honors for his dedication to preventive dentistry, including the Queen's Silver Jubilee Medal (1977). He was also the first non-dentist to be named an Honorary Member of CDA (1979) and the first to receive the Ontario Dental Association's Barnabus Day Award for Distinguished Service (1984). In 1985, the Health League of Canada presented Mr. Bowen with its award for "outstanding contribution to public education and awareness of fluoridation."

In November 1993 the *Journal* published a special feature on Mr. Bowen's outstanding career and contribution to dentistry on the occasion of his 90th birthday. At the time of his death, plans were in

Obituary

The Last "Whizz Banger"

Dr. Richard McDougall, reported to be the last "Whizz Banger," died in Victoria, B.C., last June, shortly before his 96th birthday.

Like many of the 309 men and six women who graduated from the University of Toronto's dental class of 1923, Dr. McDougall was a veteran of the First World War. Formed during 1919, the last year of the war, the class of '23 soon became known as the Whizz Bangers, taking its name from the sound made by the 77-millimetre howitzer shells used by the German Army. It is the largest class to ever graduate from U of T's dental faculty.

Born in Ontario, Dr. McDougall enlisted in the army while still in his teens. Following his graduation from Toronto in 1923, he practised in Moose Jaw, Sas-

katchewan, before moving to Victoria, B.C., in 1937.

When the Second World War began in 1939, Dr. McDougall enlisted in the Royal Canadian Dental Corps and saw service in England, having achieved the rank of lieutenant colonel. He resumed private practice in Victoria in 1946 and retired in 1966.

Dentistry has a rich tradition in the McDougall family. In 1954, Dr. McDougall's son, Douglas, graduated in dentistry at the University of Washington, while his grandson, Robert, graduated from the University of British Columbia's dental faculty just six weeks after his father retired. All three McDougalls have practised in the same Victoria office, and served many of the same patients over a period of more than 50 years. ■



A 1990 photo of the McDougall dental team. Dr. Richard McDougall (c), University of Toronto 1923, died in June 1994. He is pictured with his son, Douglas (l), University of Washington 1954, and his grandson Robert (r), University of British Columbia, 1990.

place to interview him again as Canada remembers the 50th anniversary of the introduction of fluoride in the city of Brantford, Ontario, in 1945. ■

Obituaries

Bunston, Dr. Harold: A 1952 graduate from McGill University's

faculty of dentistry, he was a life member of the Canadian Dental Association. He died August 4, 1994.

Hargreaves, Dr. E.G.: A life member of the Canadian Dental Association and a member of the Ontario Dental Association, Dr. Hargreaves graduated from the University of Toronto's faculty of dentistry in 1925. He died last year.

Lapointe, Dr. Guy: Graduated from the University of Montreal's faculty of dentistry in 1945, he lived in St-Agathe-Des-Monts, Qué. Dr. Lapointe died November 5, 1994.

Mongeau, Dr. Raynald: From Boucherville, Québec, he passed away on July 24, 1994. Dr. Mongeau was a 1954 graduate of the University of Montreal's faculty of dentistry.

Reid, Dr. Robert D.: Died December 29, 1994. He graduated from the University of Toronto's faculty of dentistry in 1939. Dr. Reid was a life member of the Canadian Dental Association and the College of Dental Surgeons of Saskatchewan.

DID YOU KNOW?

Employee benefits are growing faster than earnings. . .

Employers' payroll contributions to health and dental care, and pension plans, and to mandatory programs such as UI, CPP and QPP, and worker's compensation almost doubled from 4.6% of labor income in 1961 to 8.7% in 1979. It has continued to grow since then.



"What's It?"

Several responses were received about the "What's It?" mystery item described in the November 1994 issue of the *Journal*. Dr. R. Gordon Gover of Langley, B.C., reports on a dentist from the early 1970s who used an atomizer to spray powdered calcium hydroxide into pulp chambers following a pulpotomy. Dr. Awbesh Chandra from Hazelton, B.C., suggested that laboratory technicians used the atomizer to spray zinc stearate on wax patterns to check occlusion. Both answers may be correct and undoubtedly, knowing the ingenuity of dentists and technicians, the atomizer had a number of uses.

This month's "What's It?" items are a Firefly toothbrush and pamphlet that the editor recently purchased at an antique show. Do any readers have an idea of



the genesis of the revolving toothbrush, or know how it worked? Please contact, by mail, Dr. P. Ralph Crawford, Editor, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6. ■

There Is An Alternative To High Priced Computer Systems!

Canadian dentists coast-to-coast have used MaxiDENT dental management software for twelve years with immense satisfaction. Canada's Easiest-To-Use dental system handles billings, receivables, claims, CDAnet EDI, statements, recalls, practice marketing, and much more, and gets better with every update!

MaxiDENT includes an electronic appointment scheduler, two word-processors, a step-by-step illustration-packed User's Guide, AccPac Payables, Payroll, and General Ledger plus a free upgrade to our new Windows version.

Reliable, proven, DOS-based, multi-user, multi-tasking MaxiDENT runs on IBM compatibles and outperforms systems costing many times more. It can be used with Microsoft Windows, and never needs costly Unix or Xenix.

MaxiDENT is so easy to learn and use, just follow our instructions and run it in your office within days. Or choose low-cost professional on-site training. Either way, you have a full year's support which includes unlimited toll-free hotline help and free updates. No wonder Oral Health called MaxiDENT Canada's best kept secret!

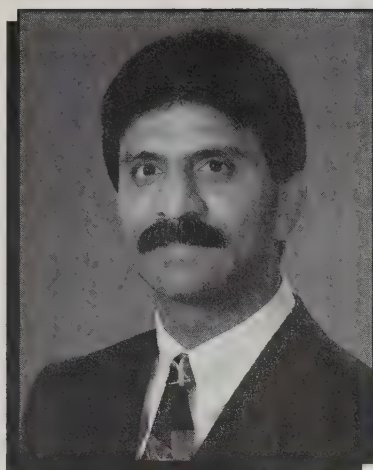
When you order MaxiDENT software, we help you get your best price on computer equipment from your local vendor, or us. Save thousands of dollars and join a growing list of satisfied users.

Don't be fooled by its low price of only \$4995. Learn why patients, staff and dentists love powerful MaxiDENT, how it saves time, eliminates bottlenecks, relieves stress, makes you money, and has important tax advantages. Phone toll free now without obligation for an information package, user list and demo disk.

Call Arthur Arkin, President, Maxim Computer Systems, developers of
MAXIDENT Dental Management Software



1-800-663-7199



Financial Freedom At Fifty Something: Pipe Dream or Possibility?

(Part 1 of 2)

Imtiaz Manji, B.Sc.

Principal of ExperDent

If there is a common thread that links new graduates, established practitioners and senior dentists contemplating retirement, it's this: they all hope to achieve financial freedom by the time they enter their fifty something years.

Despite their desire to reach this worthwhile (and obtainable) goal, however, I see more and more practitioners failing to take the necessary steps to achieve their financial freedom. But they should be. Planning and goal setting are essential to the practise of dentistry. This, of course, includes planning for your "afterlife," when you step from the operatory into retirement. Unfortunately, too many dentists (as well as many other Canadians) still fall into the trap of looking only at the financial "here and now," and forget about the "later."

Demography and Economy = Urgency

If you take a glance into the recent past, and then examine the present, it's no wonder that some dentists — particularly those on the verge of retirement — express concern (fully justifiable) about their financial futures.

From a demographic perspective, we have all heard about the baby boomers coming of age. Included among this aging population are a large number of dentists approaching their fifty something years. This, in and of itself, is not

necessarily a problem. But when you consider the career profiles of these individuals to date, it becomes more worrying.

These soon to be fifty something dentists were the direct beneficiaries of the so-called hey days of dentistry. Many of them started their own practices, right out of dental school, and most became overnight successes. Generating new patient flow and securing patient retention, which now consume so much of the dental team's energy, were barely discussed in the "good old days." There was no need: new patients arrived like clockwork, all on their own, and many stayed for life.

Back then, with a surplus of patients and a high demand for dental services (restorative work was the *modus operandi*), these practitioners were able to build their practices quickly and efficiently. This isn't to say that they didn't work hard — they certainly did. In fact, working evenings, weekends and carrying pagers in the event of a patient emergency were commonplace during the hey day years, when the fifty somethings were getting established.

The critical point actually came several years later, when these practitioners went into what I call "professional cruise control." Rather than asking themselves what was contributing to their success — so they could continue to

harness it — they made the grave error of assuming that it would be self-perpetuating. At the same time, a number of other factors came into play. In particular, once dentists were in cruise control, they lost touch with their patient base (some didn't even realize that they had excess patients to serve); ignored the fluctuations/fluidity of the economy; and became more and more consumed with family commitments.

As a result, many dentists didn't notice the gradual changes occurring in their practices over the years — the most important being the shrinking of their patient base — until they began to think about retirement around the forty something mark. But when they finally took stock of things, they found that, like them, their patients were aging and that some had become inactive — be it because of death, migrating to another dentist or moving to a seniors' home.

The implications of a shrinking patient base on practice goodwill are profound. Not only are there less active patients to treat, the natural referral pool (immediate family members) has been stunted, making it incredibly difficult to recapture the practice's previous success and growth. The dentist's investment has seemingly lost its value.



Misguided Damage Control: Reducing Hygiene Days

Time and again, dentists who find themselves in this situation begin desperately "grasping at straws" in an attempt to find a quick fix. The most common blunder usually involves the practice's hygiene department. After "returning" to the practice and discovering its ailments, the dentist, who is now looking at the practice numbers with microscopic attention, sees downtime in the hygiene department. Convinced that the logical thing to do is to reduce the number of hygiene days, he or she does just that. This marks the beginning of the devaluing of the practice.

For some practitioners, this cycle of reduction in hygiene days continues until the point where they start to notice holes developing in their own schedules. Now they embark on what appears to be the next logical step: doing their own hygiene.

What these dentists fail to realize is that such "logical" acts are expediting, rather than curtailing, their practices' demise. If they would stop and consider where their dental "work" comes from — new patient flow and the hygiene department — they would quickly realize that reducing hygiene days (or doing it themselves) can be a fast track to financial disaster.

The hygiene department should actually act as a lifeline, given that it's the area within the practice where patients are seen the most regularly. In fact, the hygiene department is the pedestal for diagnoses and referral generating. Drastically cut back on hygiene, and you drastically cut back on all the activity that it stimulates. Although, after careful analysis, an interim solution may include reducing some hygiene days, the real answer ultimately lies in rebuilding strategies that emphasize chart auditing, chart re-activation and internal marketing. It is these actions that will stimulate renewed growth within the practice.

Notwithstanding the hygiene department blunder, many of these dentists realize — to their credit —

that re-investing in what may be "tired" facilities is not the answer, particularly if they hope to retire in five to 10 years. Yet, at the same time, they face the salient knowledge that their current assets — a devalued practice and the retirement funds they've saved — are insufficient to carry them through their retirement years.

What to Do

Before outlining the options for these practitioners, I should mention that the situation I've outlined is just one variation on the same theme. Certainly, there are practitioners who are at the same point — questioning how they can afford to retire — who have not travelled the same path. Many of us know dentists who managed their practice wealth effectively throughout the years, and only ran into problems when they began to slow down (reducing work hours or days) in the later stages of their career. In effect, their reduced presence in the practice was matched by reduced goodwill. A curve ball was then thrown into their retirement plans, as they couldn't get the desired price for their practices.

If you're a senior dentist — one who is feeling financially shackled to the dental chair — you need to take immediate action to ensure a comfortable retirement. Consider these options, some of which are not only beneficial for the "wannabe" retirees, but also include advantages for practitioners at other career stages. (For new dentists or those established practitioners with many more years ahead, I urge you to take note of these options while you still have the control and time to do so. We'll be talking more about some of them next month, in the second part of this article.)

- **Option 1:** A fifty something dentist maintains his or her practice, but also associates with another practice outside of its primary drawing area. In this case, the dentist has tried to increase production levels, but to no avail. However, if present production can be achieved in less days, the practitioner is freed up to associate elsewhere,

thereby supplementing his or her primary income.

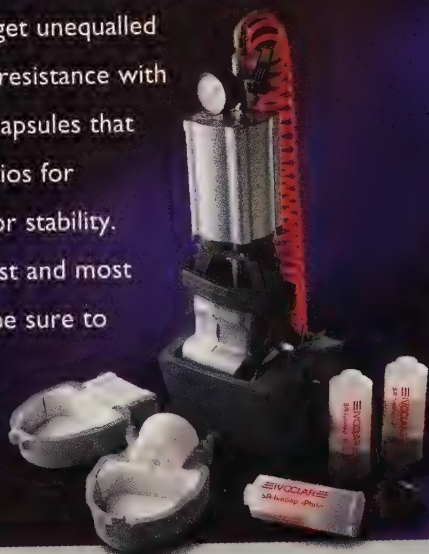
- **Option 2:** Two fifty something dentists who work in the same general area (and have reduced patient bases) come together under a single roof. The idea is to reduce the cost of delivering dentistry by reducing overheads. In effect, the two dentists would work out of the same facility. This could be done on a "swing" hours basis, or possibly by working three days each per week, and could involve sharing a receptionist, an assistant, and the cost of facility improvements.
- **Option 3:** A fifty something dentist takes his or her reduced patient base and moves into a new dentist's facility that has excess capacity. Shared overheads reduce operational stress for both parties. The fifty something may sell his or her practice to the new dentist on retirement.
- **Option 4:** A fifty something dentist with many patients wants to slow down, but needs to maintain the practice as a source of continuing supplemental income. The dentist brings in a new dentist (or one with a small patient base), and then redistributes his or her large patient base, thereby protecting practice goodwill and reducing overheads. Eventually, the younger dentist may buy the practice and the fifty something dentist could work as an associate.
- **Option 5:** A fifty something (or any established dentist) can't serve the needs of all his or her patients. An associate (new dentist or one without patients) is brought in to manage the excess.

The above options are certainly not exhaustive — there are many other operational configurations that can prove mutually beneficial for participating dentists. Whether you're a new dentist, a retiring one, or sandwiched somewhere in between, the idea is to think creatively, clearly, and most of all, to think ahead. Financial freedom is within reach but it doesn't happen by accident, it happens by design. ■

SYSTEMS FOR SUCCESS

FIT TO BE TRIED

Conventional pack and press denture processing methods always cause acrylic resin shrinkage, which results in an uncomfortable denture fit for patients as well as excessive chair time to make adjustments. Now you can get a first-time fit for full and partial dentures with the SR-Ivoclar system because our exclusive technology combines heat and pressure polymerization with continuous injection. You also get unequalled impact and fracture resistance with premeasured resin capsules that provide accurate ratios for consistency and color stability. And for the strongest and most beautiful dentures, be sure to prescribe Ivoclar denture teeth with the Ivoclar system.



SR-IVOCAP[®]

IVOCALAR WILLIAMS
IVOCALAR NORTH AMERICA, INC.

For information on this or any other products in our system, call us toll free at 1-800-5-DENTAL in the U.S., 1-800-263-8182 in Canada.

How To Get Yourself Out Of A Sticky Situation!



1
Non-Sticky Handling

2
Highly Polishable

3
Fifteen Most Popular Shades

AELITEFIL™ is available in Bulk Syringes as well as convenient Single Dose Tips that can be used with the popular Centrix Syringe.

Available Kits & Shades

Primary Kit

A1, A2, A3.5, C2, D3

Secondary Kit

A2-Op, A3, B3, C3, Incisal/Translucent

Cervical Kit

A5, B5, B4, C4, A4-Op

Compules

All Shades, 10 Compules/Pack

AELITEFIL™ — The Non-Sticky Universal Composite.

From the makers of ALL-BOND® 2 comes a new universal hybrid composite that offers non-sticky handling for all your composite restorations. AELITEFIL's 0.7µ average particle size, hybridized with submicron silica (0.04µ), provides higher filler loading for unsurpassed physical properties, optimal handling and high polishability. There are fifteen shades, including the most popular VITA® shades* as well as incisal, opaque, and extra light and dark shades. And, of course, AELITEFIL is light-cured and compatible with all popular adhesive systems. So, call us today — and get yourself out of a sticky situation!

*Shades are correlated on a best match basis. VITA is a trademark of Vita Zahnfabrik
© 1994 Bisco Dental Products, Inc.



**TO ORDER
AELITEFIL, CALL:**

FOR WESTERN CANADA & QUEBEC:

Bisco Dental Canada

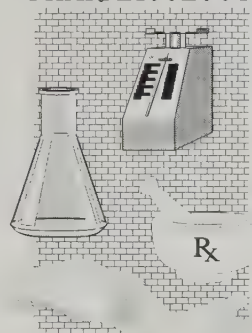
800-667-8811, 604-276-8662

FOR ONTARIO & MARITIME PROVINCES:

Clinical Research Dental Supplies and Services

800-265-3444, 519-641-3066

PHARMACOLOGY



Pharmacologic Considerations In the Management Of Temporomandibular Disorders

D.A. Haas, DDS, PhD, FRCD(C)

ABSTRACT

The management of patients with temporomandibular disorders may involve the use of a number of modalities, including pharmacotherapy. This manuscript provides an overview of the pharmacology of agents currently employed for this purpose, with an emphasis on the major drug group used, the non-steroidal anti-inflammatory drugs (NSAIDs). A brief discussion of opioid analgesics, tricyclic antidepressants, muscle relaxants, benzodiazepines, steroids, and local anaesthetics is also included, and guidelines for their use are suggested.

Introduction

Patients who are diagnosed to have a temporomandibular disorder (TMD) can be a great clinical challenge. These disorders are complicated by the fact that their etiology and pathogenesis may not be known with certainty, which subsequently impairs the dentist's ability to determine appropriate therapy. Furthermore, in many cases TMD patients do not become completely asymptomatic. All of these factors have led to the current concept that our clinical goal is not treatment, *per se*, but management.¹ If readers require a greater understanding of TMDs, Zarb's¹ comprehensive review would be a great place to start.

In fact, the management of the TMD patient may involve a number of therapeutic approaches, including pharmacotherapy. The purpose of this article is to briefly review the pharmacology of the drugs that have been used in the management of TMDs. Its intent is not to encourage the use of drugs for TMD patients, but rather to reinforce our pharmacologic knowledge. In turn, this should facilitate our selection of the most appropriate drug if pharmacotherapy is ultimately selected as a treatment option.

The first question to consider is: Which drugs are used in the management of TMDs? A recent survey of American Dental Association (ADA) members found that anti-inflammatories, non-opioid analgesics and muscle relaxants were prescribed most often.² To a lesser extent, the use of opioid analgesics, local anaesthetics, and antidepressants was also reported. Another recent review listed a total of 71 drugs that could be used for managing a TMD.³ With such a large number of drugs to choose from, a second question arises: How should a dentist determine which agent to select?

The following summaries are provided to help dentists arrive at that decision.

Placebo

When we consider using a drug to treat pain from any source, the role of the placebo effect must be

taken into account. It is generally accepted that approximately one-third of all patients will report pain-relief when given a placebo.⁴ A placebo is defined as an inert substance that is identical in appearance with the material being tested,⁵ or an intervention designed to simulate treatment. A placebo effect is a change in the patient's condition due to the symbolic importance of the treatment, as opposed to any specific pharmacologic action.

Turner et al have stated that there are three possible reasons why a patient may demonstrate clinical improvement from any given condition.⁷ First, many pain conditions resolve on their own, without any active intervention. Second, improvement may be a true effect of the specific treatment employed. And, third, there may be nonspecific effects of the act of treatment itself. This would include the effects resulting from the characteristics of a good chairside manner, such as compassion and interest, as well as other variables including the patient's expectations, the dentist's expectations, the reputation of the dentist, the cost of the treatment and the cost of the drug used. Each of these latter factors may contribute to the placebo effect.

We should be aware of the fact that patients may report improvement in their symptoms that are unrelated to any true effect from

JOURNAL

February/
Février
1995
Vol. 61
No. 2



the treatment. This may occur regardless of whether the therapy is pharmacologic or non-pharmacologic, as the placebo effect also applies to surgery and the use of appliances. Thus, the patient may improve in spite of, and not necessarily because of, any therapy employed.

The placebo effect may be ethically used as long as we do not misinform our patients, the therapy employed does no harm to our patients, and we, as caregivers, are not misled by it. In each of the drug groups discussed below, one must assume that the placebo effect could contribute to at least some of the perceived benefit from their use.

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

The non-steroidal anti-inflammatory drug (NSAID) group represents the agents most commonly used in the management of TMDs. As dentists frequently deal with pain that may be secondary to tissue injury, these drugs should be the first consideration if the prescribed treatment plan includes pharmacotherapy.

NSAIDs are widely used for acute postoperative dental pain, and have been documented to be effective analgesics. The clinical pharmacology of NSAIDs that is particularly relevant to dentistry has been described elsewhere.⁸⁻¹⁰ Drugs in this category include acetylsalicylic acid (ASA or Aspirin), ibuprofen (Motrin, Advil), diflunisal (Dolobid), flurbiprofen (Ansaid), naproxen (Naprosyn, Anaprox), and ketorolac (Toradol), among others.

The mechanism of action of NSAIDs is based on inhibiting part of the biochemical process associated with inflammation. Inflammation is initiated by tissue damage, as may occur in the pathogenesis of some forms of TMD. In fact, damage to cell membranes leads to a cascade of reactions resulting in the production of three mediators: prostaglandins, thromboxanes and leukotrienes (Fig. 1).

Prostaglandins have many actions, including the promotion of inflammation, sensitization of the

Table I
NSAID Effects

Analgesia
Anti-inflammatory
Anti-pyretic
Anti-dysmenorrheal
Gastric mucosal damage
Increased bleeding
Possible renal impairment

nerve endings that transmit pain, protection of the gastric mucosa, maintenance of renal function, and contraction of uterine muscle. Thromboxanes promote platelet aggregation, thereby assisting clot formation. Leukotrienes also promote inflammation, as well as causing bronchospasm and other signs found in allergic reactions. The mechanism of action of NSAIDs is the blockade of cyclooxygenase, resulting in the inhibition of synthesis of prostaglandins and thromboxanes.

The clinical actions of NSAIDs are summarized in **Table I**. Acetaminophen (Tylenol) differs from the NSAIDs in that it provides only analgesia and anti-pyresis, without the other actions listed. As it does not have the numerous adverse effects, it offers a relatively good risk:benefit balance. This has led to it being the analgesic most widely used by the general population. However, its lack of anti-inflammatory action may make it inappropriate for TMD patients. In these cases its use may be reserved for those situations where the patient has a contraindication to NSAIDs. The recommended dose for acetaminophen is the same as for ASA.

NSAIDs also have a number of contraindications, as summarized in **Table II**. Gastrointestinal effects are a prominent concern, as the inhibition of prostaglandin synthesis will lead to adverse effects on the gastric mucosa. These may manifest as gastric ulceration, hemorrhage, erosion, and perforation. Therefore, any patient with a history of gastric ulcers or any gastrointestinal inflammatory disease

Table II
NSAID Contraindications

Gastric ulcers
ASA-induced hypersensitivity
Severe asthma
Concurrent use of anti-coagulants
Concurrent use of anti-hypertensives
Renal disease
Pregnancy

should not be prescribed NSAIDs. In the event that this cannot be avoided, one option to consider is the administration of the prostaglandin analog misoprostol (Cytotec), 200 micrograms, four times daily, concurrent with the NSAID prescribed. Alternatively, misoprostol may be prescribed twice daily in a 400 µg dose, concurrent with NSAIDs prescribed at the same frequency. This provides protection for the stomach when NSAIDs must be used.

Relative to other NSAIDs, ibuprofen is believed to be least associated with severe gastric effects.¹¹ As such, it may be co-prescribed with misoprostol for even those patients with a history of gastrointestinal inflammatory disease if absolutely necessary.

NSAIDs may predispose to increased bleeding, as the use of these drugs leads to a decrease in thromboxane synthesis. This results in a decrease in platelet aggregation and therefore an inhibition of clot formation, although bleeding time remains within normal limits. For most NSAIDs, this effect is reversible with platelet recovery occurring within 24 hours. This is not true with ASA, however, as it irreversibly damages cyclooxygenase for the life of the platelet. Furthermore, patients on anticoagulants should not be administered ASA or other NSAIDs.

NSAIDs also impair renal function. Significant renal disease should therefore be considered as a contraindication to the use of these drugs. Unfortunately, there is

**Table III****Recommended Doses of NSAIDs**

NSAID	Dose (mg)	
ASA	1000	(q 4-6 h)
diflunisal	500	(q 12 h)
ibuprofen	400	(q 4-6 h)
flurbiprofen	50	(q 4-6 h)
naproxen	250	(q 6-8 h)
ketorolac	10	(q 4-6 h)

This table summarizes the recommended doses of a few of the many NSAIDs that may be considered. Acetaminophen differs from the true NSAIDs in that it lacks anti-inflammatory effects and many of the adverse effects. The recommended dose for acetaminophen is the same as ASA.

no simple alternative, as significant renal disease is a contraindication to the administration of most other drugs as well.

Adverse renal and gastric effects are more of a concern with the elderly. When treating the elderly, the dentist should therefore consider reduced doses and a decreased frequency of administration.

As well, caution should be exercised when prescribing NSAIDs to patients taking specific anti-hypertensives. These patients are susceptible to an interaction that may reduce the effectiveness of their prescribed anti-hypertensive in the control of blood pressure. Drugs that may be affected by this interaction include angiotensin-converting enzyme inhibitors such as enalapril (Vasotec) or captopril (Capoten), beta-blockers such as propranolol (Inderal), metoprolol (Lopressor), timolol (Blocadren) or pindolol (Visken), and diuretics such as furosemide (Lasix), spironolactone (Aldactone), triamterene and hydrochlorothiazide (Dyazide), among others. Patients taking these drugs should not have NSAIDs prescribed on a chronic basis.

Calcium channel blockers, such as nifedipine (Adalat, Procardia), verapamil (Isoptin), or diltiazem (Cardizem), do not appear to be involved in this interaction, and are therefore not of concern.

As with all drugs, allergy is a contraindication to the use of NSAIDs. Although true allergies are rare, NSAIDs may induce a unique allergy-like reaction. Severe bronchospasm and other allergy-like signs and symptoms can occur as a result of redirecting the arachidonic acid breakdown into the leukotriene pathway, as seen in **Fig. 1**. Therefore, a history of an allergic reaction to ASA, particularly an asthmatic reaction, is important in that it rules out the use of all other NSAIDs.

Understanding how to differentiate between a true allergy and this allergy-like response is important, as the treatment will differ. Theoretically, a true immune-mediated allergy to ASA should allow us to substitute another NSAID, such as ibuprofen, which has a different chemical structure. In certain susceptible patients, however, the cyclooxygenase blockade by ASA is so extensive that arachidonic acid is entirely redirected down the other major pathway. Leukotrienes may then be produced in excess, leading to bronchospasm and urticaria. In these susceptible patients, the administration of any NSAID may lead to the same redirection into leukotrienes, with a potentially fatal result. Therefore, a patient with a history of NSAID-induced allergy symptoms, particularly asthma, should not be administered any other NSAID. Furthermore, patients with a history of severe

Table IV**Opioid Effects**

analgesia
respiratory depression
sedation
mood alteration
nausea & vomiting
constipation
antitussive
tolerance
physical dependence
possible addiction

asthma, in particular if accompanied with nasal polyps and multiple allergies, appear to be susceptible to this reaction. NSAIDs are best avoided for these patients.

During pregnancy, it is ideal to avoid the administration of any drug — even though this advice is of no benefit to the patient in need of pain control. NSAIDs in large doses should not be used during pregnancy as, depending on the timing of administration, they may lead to premature closure of the ductus arteriosus or prolong gestation. Acetaminophen is preferred if any drug must be used.

The recommended doses of a few NSAIDs are listed in **Table III**. Overall, NSAIDs are likely to be the first drugs considered, if drugs are to be used at all. The success of NSAIDs in treating TMDs may be dependent on the dentist's ability to make the patient understand that these drugs are being given to help alleviate some of the pain, but are unlikely to render the patient completely asymptomatic.

Opioids

The other analgesic choice is found in the opioid group of drugs. Although they're used widely, these agents have important drawbacks compared with the NSAIDs, in particular for use in TMD patients. Their mechanism of action is the stimulation of the opioid receptors. Analgesia, their primary action, can be profound, provided that a high enough dose is admin-

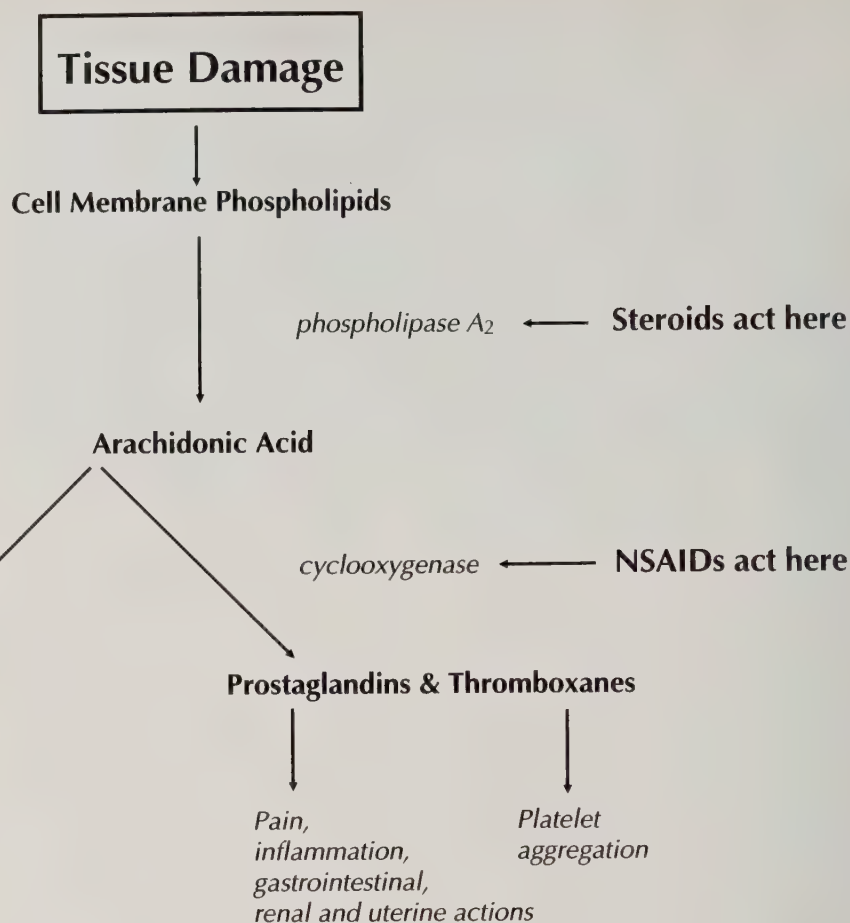


Fig. 1: This diagram represents part of the biochemical events during inflammation.

istered. Although indicated for deep visceral and cancer pain, the effectiveness of opioids in the treatment of TMDs has not been demonstrated when used in the recommended doses. While increasing the amount of opioid given will increase the amount of analgesia, this is accompanied by an increase in significant adverse effects. This indicates a need for recommendations on the upper limits of doses.

As with most other drugs, opioids are not "magic bullets" that reduce pain and have no other effect. In fact, their wide range of actions limits their therapeutic usefulness as an analgesic for outpatients. The recommended oral doses are a compromise whereby the adverse effects of opioids are reduced to a point assumed to be tolerable for patients. Unfortunately, as well as reducing the unwanted actions, the desired action of analgesia is concomitantly reduced.

All opioids share the actions summarized in **Table IV**. Other

than analgesia, the remaining effects are undesirable for use in TMD. In a dose-dependent manner, all opioids induce respiratory depression, sedation, mood alteration, nausea, vomiting, and constipation.

Repeated administration of an opioid can lead to tolerance, a phenomenon characterized by a decreased response to the previously-given dose of drug. Increasing doses are therefore required to yield a consistent level of analgesia. This is a very relevant concern in TMDs, as pain is not expected to be short term.

The chronic use of opioids can also induce a physically dependent state, characterized by a physiologic disturbance produced by drug withdrawal. Repeated administration of opioids, which may occur with TMDs, can lead to addiction in patients predisposed to chemical dependency. As chemically-dependent patients are likely to have some degree of tolerance, they would need to take even

higher doses to achieve pain-relief.

It is now believed that the administration of any mood-altering drug to a recovering chemically-dependent patient may re-activate their dependency. As a result, opioids are usually contraindicated. The chronic nature of TMD pain is therefore problematic if opioids are being prescribed.

Opioid use for TMD pain is ideally avoided, and should only be considered for acute exacerbations in conjunction with NSAIDs or acetaminophen. Opioids should be prescribed alone if the patient already has a prescription for another NSAID, or is taking ASA or acetaminophen appropriately. Elderly patients are more sensitive to opioid effects and doses should be reduced.

If an opioid is necessary, codeine should be considered first. Concurrent with a non-opioid, a dose of 60 mg every four to six hours is recommended. If the addition of codeine is insufficient, the next opioid to consider is oxycodone.



done. This drug is most commonly available with either ASA (in Percodan) or acetaminophen (in Percocet). It is more potent than codeine, and doses of 5.0 to 10 mg are recommended.

When combining a NSAID with an opioid, the principle of maximizing the non-opioid before adding the opioid should be followed. Formulations combining acetaminophen or ASA with codeine or oxycodone are available and popular because of ease of administration. However, this may be their only advantage, as the relative doses of non-opioid to opioid are often inappropriate.

A drug such as Tylenol-with-codeine#4 will provide 300 mg acetaminophen with 60 mg codeine. This is a poor choice, as it results in the administration of the maximum recommended dose of the drug with the greatest range of side effects in combination with a sub-therapeutic dose of the drug with the least side effects. A better selection would be to use three tablets of Tylenol-with-codeine#2, which will provide 900 mg acetaminophen with 45 mg codeine. Reasonable alternatives would be to prescribe codeine separately, with clear instructions that it be taken with the non-opioid.

Other opioids should rarely be used for TMD pain. Meperidine (Demerol) is chemically distinct in that it is a pure synthetic. As such, its use in the control of TMD pain should be reserved for patients who are allergic to codeine derivatives but still require an opioid.

Oral meperidine is marked by significant extraction from the liver, necessitating the administration of very high doses to obtain satisfactory analgesia. At these levels, there is an increased risk of adverse effects and increases in the metabolites, which can lead to toxicity. Similar toxicity may also occur in patients taking amphetamines or monoamine oxidase inhibitors (MAOIs). If oral meperidine is used, doses of 100 mg every four hours as needed are suggested in combination with a non-opioid.

Pentazocine (Talwin) is similar to meperidine in that it is also a pure synthetic, but is unique in

that it is an agonist-antagonist. No advantage has been demonstrated to encourage the use of this drug. Its indications are the same as for meperidine. Although it is best avoided for patients with TMD, doses of 50 mg every four hours, as needed, may be used in combination with a non-opioid.

Overall, in the management of patients with TMD, opioids have important risks that usually negate their benefits. As the pain found in TMD is commonly chronic, the use of opioids would be expected to result in tolerance and dependence. In selected situations, such as the treatment of breakthrough pain, their use may be considered if it can be restricted to short duration. Otherwise, opioids should be considered as the analgesics of last choice.

Tricyclic Anti-Depressants

There are good data supporting the use of tricyclic anti-depressants for the treatment of chronic pain.¹² This includes their use in the treatment of chronic orofacial pain.^{13,14} It is believed that the mechanism of action for these drugs is blockade of the re-uptake of norepinephrine and serotonin into the presynaptic neurons.

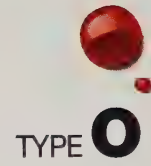
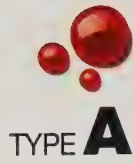
As their name implies, tricyclic anti-depressants are primarily indicated for the treatment of depression. Initially, it was believed that the analgesia achieved with these agents was secondary to their anti-depressant effect. As pain is a multi factorial condition, it was held that the treatment of depression could subsequently lead to a decrease in pain. However, it was later found that amitriptyline was effective in doses too low to have an anti-depressant action.¹⁴ As well, it was found that patients who were not clinically depressed were being successfully treated with these agents.¹⁵ Furthermore, normally at least three weeks of daily use are required before the anti-depressant action of tricyclic anti-depressants becomes apparent. Yet, the analgesic effects of these drugs were occurring after a significantly shorter time period, such as one week. These factors have led to the current belief that the tricyclics likely induce analge-

sia through a mechanism distinct from their anti-depressant action.

The use of tricyclic anti-depressants for chronic pain involves low-dose administration. With amitriptyline (Elavil), for example, doses of less than 50 mg daily have been used successfully to treat chronic pain.^{12,16-20} This differs from anti-depressant treatment, where doses of up to 300 mg daily may be required. Other tricyclic anti-depressants that have been used include imipramine (Tofranil), doxepin (Sinequan), desipramine (Norpramin), nortriptyline (Aventyl), and clomipramine (Anafranil).

Dentists who determine that these agents should be prescribed for the treatment of TMD must consider their side effects and the potential drug interactions, which are summarized in **Table V**. As these drugs block the re-uptake of catecholamines, they will increase catecholaminergic neurotransmission throughout the body. The addition of exogenous catecholamines, such as the epinephrine (adrenaline) we use in many of our local anesthetic formulations, may potentially lead to adverse cardiovascular effects. Its use should therefore be minimized to a limit of 0.04 mg per appointment for these patients. The sympathomimetic action of tricyclic anti-depressants is also a concern when treating patients who have cardiovascular system disease.

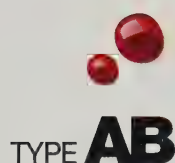
Other potential side effects of tricyclic anti-depressants include anticholinergic actions leading to xerostomia, blurred vision and urinary retention. They should ideally not be used in patients where these conditions are problematic. Additional adverse effects include sedation, disorientation, cardiovascular system effects and the potential for interaction with other drugs that may affect catecholamine metabolism or action. Concurrent use of the monoamine oxidase inhibitors (MAOIs) is a definite contraindication to tricyclic administration. Drug interactions may occur with any other central nervous system (CNS) depressant such as alcohol, anxiolytics or opioids, whose depressant action may be potentiated.



A guide to the types of patients



TYPE **B**



TYPE **AB**

who need Peridex:

Gingival bleeders

Despite your best efforts, many of your patients continue to display bleeding gums on recall.

And that calls for strong medicine...

PERIDEX® (chlorhexidine gluconate 0.12%) the only prescription oral rinse indicated for gingival bleeding.

When used adjunctively with brushing and flossing, PERIDEX helps promote healing, as demonstrated by its ability to significantly reduce bleeding sites and inflammation due to gingivitis.¹ No serious systemic reactions have been associated with PERIDEX. The most common side effects are an increase in staining of oral surfaces, an increase in supragingival calculus and a slight and temporary alteration in taste perception.

Gums that bleed heal better with

PERIDEX®
(CHLORHEXIDINE GLUCONATE 0.12%)

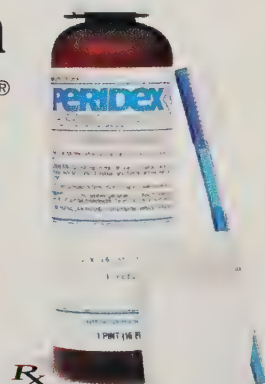
New in Canada!

For ordering information
call 1-800-363-2876

Procter & Gamble Inc.

Please see full prescribing information.

PAAB



*Peridex
Sig: one capful (15 mL)
twice daily
after brushing
for 3 months*

**Table V****Tricyclic Antidepressants: Precautions**

cardiovascular disease	
anticholinergic effects	
drug interactions	CNS depressants
	cimetidine
	MAOIs
	sympathomimetics
narrow-angle glaucoma	
seizure disorders	
hepatic disease	
renal disease	
pregnancy	
suicidal tendencies	

The anti-ulcer medication cimetidine may inhibit the metabolism of the tricyclics, leading to toxicity. Finally, as with any medication having CNS effects, the elderly should be prescribed reduced doses of these drugs, if they are to be used at all.

Therefore, although there are significant side effects with the tricyclics, their use may be indicated where chronic pain characterizes the TMD. In particular, they may be appropriate when TMD pain is accompanied by a diagnosis of clinical depression.

Skeletal Muscle Relaxants

These agents are often considered in the management of TMDs. Unfortunately, there are few scientifically-sound clinical studies supporting their use for this purpose.

The original rationale for using skeletal muscle relaxants in controlling TMD pain was to break the "pain-spasm" cycle,^{3,21} but the validity of this concept has been challenged.¹ These agents work putatively through the inhibition of polysynaptic pathways in the CNS. Their relaxant effects are also likely secondary to their sedative actions.

A wide range of skeletal muscle relaxants, with greatly differing structures, are used. Examples of these drugs include carisprodol (Soma), orphenadrine (Norflex),

methocarbamol (Robaxin), and cyclobenzaprine (Flexeril). There are a number of precautions to consider before using these drugs to treat TMD. As summarized in **Table VI**, adverse effects include potentiation with other CNS depressants, sedation, dizziness, and visual disturbances.

Cyclobenzaprine is somewhat unique in that it is a tricyclic antidepressant with muscle relaxant properties, and has been used for the treatment of fibrositis²² and fibromyalgia.²³ The same precautions are warranted when using this drug as those required with other tricyclic antidepressants. It is currently recommended that cyclobenzaprine's use as a muscle relaxant be limited to a duration of less than three weeks.

If muscle spasm is diagnosed, the short-term administration of a muscle relaxant may be warranted. Otherwise, until there are further randomized clinical trials clearly demonstrating the efficacy of muscle relaxants for the treatment of TMDs, their use is difficult to justify.

Benzodiazepines

The benzodiazepines are among the drugs most commonly used by the general population. These agents are characterized by their relatively high margin of safety, with therapeutic indices

Table VI**Skeletal Muscle Relaxants: Precautions**

concurrent CNS depressants
sedation
dizziness
visual disturbances
limited duration of use

Table VII**Benzodiazepine Effects**

anxiolysis
sedation
amnesia
anti-convulsant
muscle relaxation

that are much greater than those of comparable drugs used to induce sedation such as the barbiturates or the alcohols.

Benzodiazepines act by specifically binding to the benzodiazepine receptor. The actions of all benzodiazepines share the characteristics summarized in **Table VII**. Their primary action is anxiolysis, or anxiety-relief. This may occur with relatively low doses that can be tolerated with a minimum of adverse effects. Accompanying this action, and in particular with higher doses of benzodiazepine, sedation does occur. This is due to the ability of the drug to suppress alertness, arousal and responses to stimuli, and thereby calm the patient. As doses increase further, the sedative effect may progress into a "hypnotic" effect, meaning that the drug may induce sleep. Concurrent with these actions are anterograde amnesia and an increase in the seizure threshold, leading to anti-convulsant effects.

Benzodiazepines are also reported to induce muscle relaxation, possibly of central origin. However, it may be difficult to differentiate whether this is a distinct property or if it occurs secondarily to the anxiolytic action.

Table VIII

Guidelines For TMD Pharmacotherapy

Determine the source of pain, and contribution of:	inflammation
	muscle spasm
	anxiety and/or depression
Balance the risks/benefits of any drug selected.	
Remember that drugs play an adjunctive role only.	
Be aware of the placebo effect.	
Determine best option:	no drug
	NSAID alone
	NSAID in combination with another drug

Although benzodiazepines are relatively safe drugs, there are a number of adverse events that may occur, including paradoxical reactions such as excitation, prolonged psychomotor impairment or vertigo. Chronic administration of excessive doses of triazolam may lead to psychotic disturbances, although this is not likely if the drug is prescribed correctly.

Contraindications to the use of benzodiazepines include allergy, myasthenia gravis, acute narrow angle glaucoma and possibly porphyria. As with any mood altering drug, the use of these agents is best avoided with patients who are recovering from chemical dependency. Concurrent use of cimetidine may result in prolonged sedation, while concurrent use of other CNS depressants may result in potentiation of effect.

Diazepam (Valium), the prototypical benzodiazepine, has had a long history of use in dentistry. Taken orally, it has a peak effect within two hours. It has a prolonged duration of action, however, as it has a number of active metabolites. A newer benzodiazepine, which has already been used in the management of TMD, is alprazolam (Xanax).²⁴ This drug differs from the other benzodiazepines in that it is indicated not only for the treatment of anxiety, but also for mental depression.

The benzodiazepines have important drawbacks for the management of a patient with TMD, similar to those found with opioids. For

example, the chronic nature of many TMDs may lead to tolerance, physical dependence, and possibly addiction. The scientific literature supporting the use of benzodiazepines in treating TMDs is weak, and therefore the risk:benefit balance is usually not favorable. These agents may play a role in a few selected cases, such as the short-term treatment of anxiety-induced exacerbations. Otherwise, their use should likely be quite limited for TMD patients.

Steroids

Corticosteroids, administered by injection intra-articularly, have also been used in the management of TMDs. The mechanism of action of these anti-inflammatory drugs is shown in **Fig. 1**. They have an advantage in that there is little pharmacologic risk to the patient in one administration. However, there is a potential for physical trauma from the injection itself, and it should only be administered by dentists who have expertise with this injection technique. With TMD, this approach has been reported to provide some analgesia and a partial return of function.²⁵ One long-term study found that a maximum of three injections, spaced at least four weeks apart, provided relief of signs and symptoms of TMD eight years later.²⁶

The injection of a steroid combined with sodium hyaluronate also shows some potential for therapy.²⁷ Dexamethasone (Decadron), methylprednisolone (DepoMedrol)

or triamcinolone (Kenalog) may be used for this purpose. Overall, this approach may be of value for the management of acute exacerbations in TMD patients.

Local Anesthetics

Local anesthetics may be used for the treatment of acute painful trigger points and restriction of jaw motion.²⁸ These injections may provide acute pain relief. Although there may be a potential risk of damage from the injection itself, otherwise there are no significant pharmacologic contraindications.

Summary

In summary, there are numerous drugs available to choose from when managing the TMD patient. It must be emphasized that drugs should be considered as an adjunct to other treatment, and rarely as a sole means of therapy. Acknowledging this, the first consideration is to determine the source of pain, and the role of each of the factors of inflammation, muscle spasm, anxiety and/or depression. Given that tissue damage, and hence inflammation, is likely to contribute etiologically to the pain of the TMD patient, the use of a NSAID is logical. These drugs have potential for reducing some of the pain experienced by these patients, as well as controlling the inflammatory process.

Opioid analgesics have a more unfavorable risk:benefit balance, and their use should be limited to controlling breakthrough pain. The role of muscle spasm is more controversial, but if the dentist diagnoses that this is a contributing factor, then the addition of a muscle relaxant may be justified. Hopefully, future studies will clarify the role of muscle relaxants in TMD therapy.

If anxiety is diagnosed as exacerbating the symptoms of TMD, an anxiolytic may be warranted. As is the case with the opioids, the long-term administration of benzodiazepines are best avoided. If chronic anxiety is suspected, the patient should be referred to his or her physician or psychiatrist for a definitive diagnosis and treatment. Similarly, depression may contribute to an exacerbation of symp-



toms, and may justify the use of an antidepressant. Again, if depression is suspected, the patient should be referred to his or her physician or psychiatrist for a definitive diagnosis.

Alternatively, however, if chronic pain is diagnosed, then the use of low-dose tricyclic antidepressants may be indicated. Provided that they are aware of the relevant pharmacology, dentists may prescribe these agents to control chronic pain, although it is often best to coordinate this with the patient's physician.

Once a decision is made that a drug may be beneficial as part of the management of TMD, the next decision is whether the benefits outweigh the risks. Unfortunately, there are no "magic bullets" that will only eliminate the pain of a TMD without causing any other effects. Each drug we select has some element of risk, the importance of which is dependent on the patient's medical history. The dentist must carefully consider all of these factors on an individual basis, for each patient, and then determine whether the administration of a particular agent is warranted. In all cases, a drug should be prescribed only if the dentist believes that the risk:benefit balance is favorable.

Finally, the practitioner must remember the placebo effect. This approach may be used to the patient's advantage, provided no harm is being done to the patient, and the dentist is not misled by it. Pharmacotherapy may be a means to reduce the pain enough to make it tolerable, but it must be made clear to the patient that total pain elimination is very unlikely.

Suggested guidelines for TMD pharmacotherapy are summarized in **Table VIII**. After assessing all of the factors, the conclusion may be reached that either no drug is required, or a NSAID is indicated with or without another agent. Specific contraindications will limit the categories of drugs that may be used. One of our objectives is to select the optimal drug, if one is to be used. Pharmacotherapy is just one potential component of the overall management of TMD patients. ■

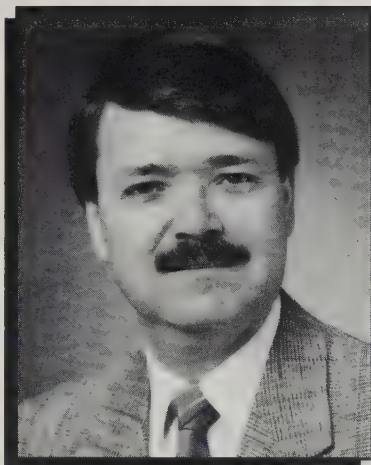
Acknowledgements: This manuscript is derived, in part, from the preparation for the symposium on "The current treatment and management of temporomandibular disorders," held at the University of Toronto in October 1994.

Dr. Haas is an associate professor in the department of anesthesia, faculty of dentistry, and the department of pharmacology, faculty of medicine, at the University of Toronto. He is also on the active staff of the department of dentistry at Sunnybrook Health Science Centre.

Reprint requests to: Dr. D. Haas, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, ON M5G 1G6.

References

1. Zarb, G.A., Carlsson, G.E. and Rugh, J.D. Clinical Management. In: *Temporomandibular Joint and Masticatory Muscle Disorders*. Zarb, G.A., Carlsson, G.E., Sessle, B.J. et al. eds., Munksgaard, Copenhagen, 1994.
2. Glass, E.G., Glaros, A.G. and McGlynn F.D. Myofascial pain dysfunction: treatments used by ADA members. *J Craniomandibular Practice* 11:25-29, 1993.
3. Gangarosa, L.P., Mahan, P.E. and Ciarlone, A.E. Pharmacologic management of temporomandibular joint disorders and chronic head and neck pain. *J Craniomandibular Practice* 9:328-338, 1991.
4. Beecher, H.K. The powerful placebo. *JAMA* 159: 1602-1606, 1955.
5. Stedman's Medical Dictionary, 23rd ed., Williams & Wilkins Co., Baltimore, p. 1092, 1976.
6. Brody, H. Placebo effect: an examination of Grunbaum's definition. In: White, L., Tursky B. and Schwartz, G.E. eds., *Placebo: Theory, Research and Mechanisms*. New York, N.Y., Guilford Press, pp. 37-58, 1985.
7. Turner, J.A., Deyo, R.A., Loeser, J.D. et al. The importance of placebo effects in pain treatment and research. *JAMA* 271:1609-1614, 1994.
8. Dionne, R.A. New Approaches to preventing and treating postoperative pain. *JADA* 123:27-34, 1992.
9. Haas, D.A. Current concepts in the use of analgesics in dentistry. *Oral Health* 82(2):712, 1993.
10. Dionne, R.A. and Gordon, S.M. Nonsteroidal anti-inflammatory drugs for acute pain control. *Dent Clin N Am* 38:645-667, 1994.
11. Langman, M.J., Weil, J., Wainwright, P. et al. Risks of bleeding peptic ulcer associated with individual non-steroidal anti-inflammatory drugs. *Lancet* 343:1075-1078, 1994.
12. Onghena, P. and Van Houdenhove, B. Antidepressant-induced analgesia in chronic non-malignant pain: a meta-analysis of 39 placebo-controlled studies. *Pain* 49:205-219, 1992.
13. Hersh E.V. Tricyclic antidepressant drugs: pharmacologic implications in the treatment of chronic orofacial pain. *Compendium* 8:689-694, 1987.
14. Sharav Y., Singer, E., Schmidt, E. et al. The analgesic effect of amitriptyline on chronic facial pain. *Pain* 31:199-209, 1987.
15. Alcott, J., Jones, E., Rust, P. et al. Controlled trial of imipramine for chronic low back pain. *J Fam Prac* 14:841-846, 1982.
16. Diamond, S. and Baltes, B.J. Chronic tension headache treated with amitriptyline — a double blind study. *Headache* 11:110-116, 1971.
17. Gomersall, J.D. and Stuart, A. Amitriptyline in migraine prophylaxis. *J Neuro Neurosurg Psych* 36:684-690, 1973.
18. Gessel, A.H. Electromyographic bio-feedback and tricyclic antidepressants in myofascial pain-dysfunction syndrome: psychological predictors of outcome. *JADA* 91:1048-1052, 1975.
19. Pilowsky, I., Hallett, E.C., Bassett, D.L. et al. A controlled study of amitriptyline in the treatment of chronic pain. *Pain* 14:169-179, 1982.
20. Zitman, F.G., Linssen, A.C.G., Edelbroek, P.M. et al. Low dose amitriptyline in chronic pain: the gain is modest. *Pain* 42:35-42, 1990.
21. Stanko, J.R. A review of oral skeletal muscle relaxants for the craniomandibular disorder (CMD) practitioner. *J Craniomandibular Practice* 8:234-243, 1990.
22. Bennett, R.M., Gatter, R.A., Campbell, S.M. et al. A comparison of cyclobenzaprine and placebo in the management of fibrositis. *Arthritis and Rheumatism* 31:1535-1542, 1988.
23. Carrette, S., Bell, M.J., Reynolds, W.J. et al. Comparison of amitriptyline, cyclobenzaprine, and placebo in the treatment of fibromyalgia. *Arthritis and Rheumatism* 37:32-40, 1994.
24. Nemcovsky, C.E., Gazit, E., Serfati, V. et al. A comparative study of three therapeutic modalities in a temporomandibular disorder (TMD) population. *Journal Craniomandibular Practice* 10:148-155, 1992.
25. Kopp, S., Carlsson, G.E., Haraldson, T. et al. Long-term effect of intra-articular injections of sodium hyaluronate and corticosteroid on temporomandibular joint arthritis. *J Oral and Maxillofac Surg* 45:929-935, 1987.
26. Wenneberg, B., Kopp, S. and Grondahl, H.G. Long-term effect of intra-articular injections of a glucocorticosteroid into the TMJ: a clinical and radiographic 8-year follow-up. *J Craniomandibular Disorders Facial Oral Pain* 5:11-18, 1991.
27. Kopp, S., Akerman, S. and Nilner, M. Short-term effects of intra-articular sodium hyaluronate, glucocorticoid, and saline injections on rheumatoid arthritis of the temporomandibular joint. *J Craniomandibular Disorders Facial Oral Pain* 5:231-238, 1991.
28. Gregg, J.M. and Rugh, J.D. Pharmacological Therapy. In: *A Textbook of Occlusion*, Mohl, N.D., Zarb, G.A., Carlsson, G.E. et al, eds., Quintessence, Chicago, pp. 351-358, 1988.



Hi, I'm Your Neighborhood Pharmacist

Patrick Crawford, B.Sc. Pharm., M.Sc.

Prince Edward Island

In addition to the hundreds of medications already in use in Canada, new medications, new uses for old medications, and even completely new classes of medication are being introduced on an almost daily basis.

Some of these medications may be used to treat or prevent dental problems. However, many more can adversely affect the oral health of your patients due to their side effects, which may include xerostomia and gingival hyperplasia.

Even some of the medications routinely used to treat dental problems have side effects. It's also possible for them to affect a patient's existing medical conditions, or to interact with other medications to cause serious adverse reactions.

Keeping track of all the possible side effects and reactions can be mind boggling. Your neighborhood pharmacist, however, is a medication expert. He or she has specialized knowledge and training, and can provide you with the medical and pharmaceutical information you need to offer your patients the best and safest dental care possible.

Medication Profiles

It is standard practice in dental offices to take a medical history of all new patients. This history should include a list of the patient's medical conditions, any known medication allergies, and

any medications, both prescription and nonprescription, that the patient is taking. It is a good idea to update this information at every appointment, as a patient's medications and medical conditions often change.

Many people have difficulty remembering the names of the medications they're taking. This is especially true of elderly patients taking several medications at once for multiple medical conditions. Fortunately, today pharmacies keep up-to-date medication profiles of all of their patients, and would be happy to share this information with you. Problems may occur, however, if the patient obtains his or her medication from more than one pharmacy. In such cases, phone calls to several pharmacies or even to the patient's physician may be needed to produce an accurate medication profile. Your local pharmacist may agree to make these phone calls for you.

Adverse Medication Reactions

All medications can cause side effects, or interact with other medications, a patient's medical condition, or even food. The vast majority of medication side effects and interactions are minor, and only require that both you and your patient are aware that they may occur. Other side effects or interactions, however, are more

serious, and can require discontinuation of the medication or even the hospitalization of the patient.

Elderly patients, who often have multiple medical conditions requiring the regular concurrent use of several medications, are especially susceptible to adverse reactions. The potential for side effects and medication interactions to occur increases dramatically as the number of medications used increases. In fact, for this age group, it is now estimated that as many as 75 per cent of hospital admissions are due directly or indirectly to adverse reactions to medications.

Consulting a patient's medical history and knowing the contraindications, side-effects, and potential interactions of the medications you regularly prescribe can help to avoid these problems. The Compendium of Pharmaceuticals and Specialties (CPS), manufacturer's literature, or your pharmaceutical company can provide most of the medication information you need.

Unfortunately, the information from these sources is often out of date, missing important details, or in a form that is difficult to use. In contrast, your local pharmacist can provide you with up-to-date information that is both understandable and easy to use. He or she can also check for possible medication interactions that you may not be familiar with. In addi-

JOURNAL

February/
Février
1995
Vol. 61
No. 2



tion, your pharmacist may also suggest less costly, safer, or more effective alternatives to the medications you regularly prescribe.

Medication side-effects or interactions can also adversely affect the oral health of your patients. Problems such as xerostomia, gingival hyperplasia, and tardive dyskinesia are commonly caused by medications. Similarly, other oral problems, such as altered taste, recurrent oral candidiasis or aphthous ulcers, denture discoloration, persistent halitosis, or difficulty swallowing may be due to more obscure medication side-effects.

Common medication-related problems can usually be diagnosed by comparing the patient's medication profile to the medication monographs provided in sources such as the CPS. However, diagnosing more obscure medication-related problems may require information that is not commonly available. Most pharmacies have access to this type of information and will be glad to share it with you. In fact, the majority of pharmacists take special pride in being able to help diagnosis such problems.

Prescription Screening

All prescriptions are checked by a pharmacist for potential problems before the medication is released to the patient. This includes checking the dosage and form of medication prescribed, as well as the administration instructions. It also includes checking for possible allergies, interactions with the patient's other medications, interactions with the patient's other medical conditions, and interactions with foods that the patient might eat.

If problems are found in any of these areas, the pharmacist will either phone you or, at the very least, provide special counselling to the patient. The prescribed medication will only be released to the patient when the pharmacist is satisfied that all potential problems have been resolved.

The checking process depends on the pharmacist having access to an accurate medication and health profile of the patient. In the near

future, province-wide health computer systems may provide this information to every pharmacy. However, at present it is important for patients to fill all of their prescriptions at the same pharmacy. If they don't, potentially serious problems may be missed.

Therefore, dentists should encourage their patients to have all of their prescriptions filled at one pharmacy. This should not be a burden for the patient. Most pharmacies offer free prescription delivery if a patient can't leave home to get their prescription filled.

Prescription Counselling

In most pharmacies, patients are counselled by a pharmacist before new prescriptions are released to them. This counselling includes information on the name of the medication and what it is used for, how and when the patient should take the medication, how long he or she should take the medication, any side effects that might occur, what to do if the patient accidentally misses a dose, and what to do if any problems occur. This is done to ensure that the medication is used safely, and to reinforce any instructions given to the patient by the dentist. Usually, both verbal and written information is provided to the patient.

Special Preparations

Often, there is no commercially-produced preparation available to treat a specific dental problem. In such cases, a pharmacist may be able to compound a special oral paste, mouthwash, or lozenge to meet your specifications. Other forms of medication may also be available. In fact, some pharmacies specialize in making these special preparations. Contact your local pharmacy for more information.

After-Hours Assistance

A pharmacist is often the first health professional consulted about dental problems when your office is closed. Nonprescription remedies are usually recommended to treat minor problems, such as aphthous ulcers, cold sores, or teething. However, more serious problems, such as tooth ache, broken teeth, or ill-fitting

dentures are always referred to a dentist. Oral analgesics may be recommended for more serious problems until proper dental treatment can be obtained.

Equally important, pharmacists are often the first healthcare professionals consulted regarding good oral hygiene. They routinely counsel patients on the methods of basic good oral hygiene, including brushing and flossing techniques. They also provide advice on the selection of oral hygiene products, such as toothbrushes, dentifrices, mouthwashes, tooth whiteners, and fluoride supplements. But when in doubt, a pharmacist will always recommend that the patient speak to his or her dentist.

Getting to Know Your Neighborhood Pharmacist

Next time you're in your neighborhood pharmacy, take a good look around and introduce yourself to the pharmacist. Talk to him (or her), and ask for details on what he (or she) can do for you and your patients. You might be pleasantly surprised. ■

Patrick Crawford is a practising pharmacist in Charlottetown, P.E.I.



EPILEPSY CANADA
EPILEPSIE CANADA

EPILEPSY

**Think Epilepsy.
Think Research.**

**Give
generously.**



OTTAWA 1995

Canadian Dental Association Annual Meeting

August 26 - 29 • 26 - 29 août

Réunion annuelle de l'Association dentaire canadienne

UPDATE

Ottawa: A City Worth Re-discovering



The next CDA Annual Meeting will take place from August 26th - 29th, in Ottawa, a destination of beauty in any season. As the lazy-hazy days of summer draw to an end, it is the perfect time to attend the convention and experience all that the city has to offer.

For those of you who are familiar with Ottawa, you know that it is surrounded by miles of beautifully groomed pathways, beaches and waterways and has the longest network of scenic bicycle paths of any city in North America. You also know that the city's natural beauty blends perfectly with its eclectic mix of architecture: from the Gothic Parliament buildings to the ultra-modern lines of the Museum of Civilization. It is inviting, on a sunny day, to pack a picnic lunch and enjoy a quiet interlude in one of the numerous parks dispersed throughout the city.

Serene as it may be, however, Ottawa is also a city bustling with activities ready to be discovered or experienced anew. You may take a walking-shopping tour of the Byward Market, one of the oldest farmers markets located right in the heart of the city. In addition to the fresh produce of regional farmers, you will find homemade crafts from local artisans, many original boutiques, a plethora of sidewalk cafés and talented outdoor entertainers whose music will not fail to make you stop, listen and perhaps tap your feet to the beat of a tune.

In the daytime, you might want to make your way to the shopping districts, such as Canada's oldest pedestrian mall, Sparks Street. Visit the smaller specialty shops, hunt for that special find on Antique Row along Bank Street or browse through the World Exchange Plaza with its one-of-a-kind spherical clock, attracting the attention of local residents, downtown shoppers and tourists. Countless tours are also available that will allow you to visit the Parliament Buildings, the Canadian Mint, numerous

embassies located in and around Ottawa, the Prime Minister's and other stately residences as well as many other attractions.

Ottawa also boasts of no less than twelve national museums that are sure to appeal to all interests and challenge the imagination of every age. Among these are the Canadian Museum of Civilization with its completely refurbished children's section and its Cineplus, the world's only IMAX/OMNIMAX theatre. Also there's the National Art Gallery of Canada in which you will have the opportunity to see a rare exhibit of the Queen's Portraits. The Canadian Museum of Nature has a program where children can sleep overnight under the jaws of a gigantic dinosaur. There's also the National Museum of Science and Technology, the National Aviation Museum and the Canadian Museum of Contemporary Photography.

In the evenings, only your taste will dictate what you will sample. Artists from all over North America assemble in the Nation's Capital for the many music festivals that not only celebrate Canada's cultural diversity, but cater to jazz, folk and rock music lovers alike. Outdoor and indoor concerts, dance music, great bars, live theatre, dinner theatre and dance performances. Whatever you choose, however, you will always wish you had stayed one more day.

Plan now to attend!

Elizabeth MacSween, DDS
Chair
CDA 1995 Annual Meeting
Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario
K1G 3Y6

Tel.: 1-800-267-6354
Fax: (613) 523-3062



OTTAWA 1995

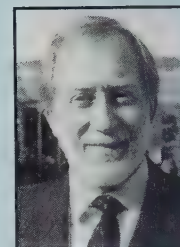
Canadian Dental Association Annual Meeting
August 26 - 29 • 26 - 29 août
Réunion annuelle de l'Association dentaire canadienne

Scientific Program: Hands-on Courses

ALAN A. BOGHOSIAN
D.D.S.
Chicago, IL



STANLEY F. MALAMED
D.D.S.
Los Angeles, CA



Dental Materials for Dental Assistants

The results achieved by the practitioners do not always match the highly successful performance of certain materials in laboratory testing and controlled clinical trials. This can be attributed, in part, to a lack of understanding of the properties of these materials.

In this course, designed specifically for Dental Assistants, Dr. Boghosian will discuss properties and allow hands-on mixing and handling of traditional and of the more recent dental materials. Participants will be given the opportunity to handle diverse categories of dental biomaterials, such as cements, impression materials, light cured restoratives while learning techniques to maximize the physical properties of the materials.

Emergency Medicine in Dentistry

Life threatening emergencies can occur at any time, in any place, and to anyone. Because of the stresses involved in the typical dental office environment, the incidence of such events is considered to be greater in dentistry. It is therefore essential that all personnel become proficient in the rapid recognition and management of these situations.

In this program, Doctor Malamed will review the essentials of emergency management and will provide the participants with the opportunity to gain clinical skill in the management of various simulated "emergency situations". The use of a positive pressure breathing apparatus, "Ambu" bag and pocket mask will be demonstrated and participants will be able to gain skill in the use of these devices. The dental office emergency drug kit and equipment will also be reviewed and demonstrated. Doctors and their staff will be asked to manage emergency situations including: unconsciousness, respiratory difficulty, altered consciousness, drug-related situations, seizures, and chest pain.

It is strongly recommended that the entire dental office team — both chairside and non-chairside — participate in this program together. It is suggested that offices bring their own emergency kit with them for evaluation and discussion.

JOHN COX
D.D.S., Dip. Pros., M.Sc.
Ottawa, ON



Implants: Basic Prosthetic Certification Course

This one and a half day certification course will consist of a full-day lecture and a half-day hands-on course. During the lecture portion, the clinician will review Basic Science (brief history of dental implants, principles of osseointegration and evolution of the Branemark design) as well as examine surgical procedures. Criteria for patient selection stating indications and contra-indications, patients' expectations, radiology and diagnostic information will be discussed along with the question "How do I explain implants to my patient in order to elicit an informed consent?". Procedures to be examined will consist of the following:

Edentulous Prosthetic Procedures

- fixed bridge vs overdenture
- bridge design / materials
- lab prescription

Partially Edentulous Procedures

- single tooth
- fixed bridges
- new products

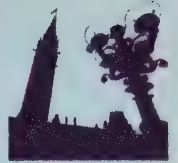
Oral Hygiene Products

Other Applications

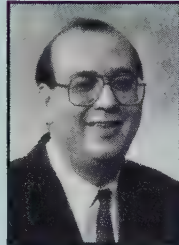
- orthodontic anchorage
- maxillofacial applications

How to Avoid Complications Before They Occur

During the hands-on participation course edentulous and partially edentulous procedures will be done. Actual implant components will be used on models to carry out prosthodontic procedures while slides will demonstrate the sequence as procedures are performed. In the case of the partially edentulous, single tooth and fixed bridge impression procedures will be undertaken. At the end of the course participants will be presented with a certificate.



SALAM SAKKAL
M.S., D.M.D.
Montreal, QC



Advanced Concepts in Endodontics

This hands-on workshop will review many new and advanced techniques in endodontics to help you improve your skills. It will allow you to implement these most recent concepts within your practice immediately and perform endodontics with better control, ease and satisfaction. The following topics will be discussed.

- All fundamental steps for a successful root canal therapy
- Special techniques for safer access cavities
- Curved canal management
- Different filling techniques
- The use of electronic *apex locators*
- Mechanical handpieces in conjunction with the *NICKEL TITANIUM* files
- Post-endodontic restorative procedures and the *Endo-composiposts*.

The participants will:

- Prepare 45° curved canals
- Obturate in 3-D these canals using the modified lateral compaction and Sealextra root canal sealer.
- Prepare a dowel space to receive an Endo-composipost University of Montreal

*** This listing is only preliminary, more hands-on courses will be added.**

ST. JOHN AMBULANCE

CPR — Basic Rescuer Level 'C'

The CPR level 'C' course has been designed to Canadian Heart Foundation standards. This five to six hour course is geared to health care professionals.

Topics include:

- Causes and prevention of heart disease
- Recognition and first aid for heart attacks
- Contracting emergency medical services
- Artificial Respiration
- One or two operator CPR for adult, child and infant
- Obstructed airway procedures

JEFFREY A. SHERMAN
D.D.S.
Oakdale, NY



Electrosurgery

Radiosurgery is the art of sculpting tissue with the aid of a radio signal. Electrosurgical techniques are truly designed for modern practice of dentistry. Radiosurgery, with its assortment of electrode tips, permits carving, sculpting or alerting of soft tissue with little or no hemorrhage.

This course will offer discussion and demonstration of all electrosurgical cutting, coagulation and fulguration modes, on the latest electrosurgical/radiosurgical equipment. It will present basic fundamentals and advanced procedures with a laboratory demonstration by the clinician. A comprehensive video will demonstrate bonding, crown preparations, gingivectomy, frenectomy, operculectomy, bleaching, biopsies, pulpotomy and apicoectomy. The hands-on supervised participation will also include the use of various waveforms, crown preparation, operculectomy, frenectomy and biopsy.



OTTAWA 1995

Canadian Dental Association Annual Meeting
August 26 - 29 • 26 - 29 août
Réunion annuelle de l'Association dentaire canadienne

Scientific Program: Limited Attendance

W. CHARLES BLAIR
D.D.S.
Charlotte, NC



Achieving Financial Independence

Will you join the 5% of dentists who can afford to retire? This fast-paced course is crammed full with many "secrets" dentists have used to double — or even triple — their net worth in only ten years! Using these winning financial strategies, you will easily develop a personalized gameplan for reaching financial freedom.

This hard-hitting program designed for dentists and their spouses contains "inside information" that you simply can't find elsewhere — gleaned from years of experience working exclusively with the dental profession. You'll learn how to plan investments, develop a personalized retirement plan, improve practice profitability, save thousands in unnecessary insurance costs and discover tax-free income secrets.

If you are frustrated by your high stress, low results financial situation, now's the time for change. This program will give you everything you need to get results **NOW!**

Dental Practice Transitions

This course is designed for dentists and their spouses who are considering entering into an associateship or partnership relationship or the purchase or sale of a professional practice within five years.

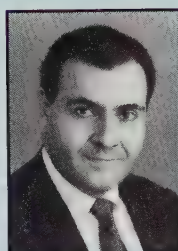
The course material presents an in-depth look at the issues and complexities of these transactions and offers the opportunity for participants to consider the positive and negative aspects of the options available to them. The session is designed to improve the planning process and to control the impact these transactions will have on their professional, financial, and personal lives.

The course is presented in a fast-moving, non-technical manner. It is not recommended for dental staff personnel.

About the clinician >

A graduate of Erskine College and of the University of North Carolina at Chapel Hill, Dr. W. Charles Blair is co-editor of the Tax column for *Dental Economics* magazine and co-publishes the popular *Blair/McGill Advisory* newsletter. He is a former practicing dentist who provides consulting services to the dental industry on a full-time basis. Dr. Blair holds degrees in Accounting, Business Administration, Mathematics and Dental Surgery.

ALAN A. BOGHOSIAN
D.D.S.
Chicago, IL



Contemporary Dental Materials and Their Clinical Application

The fast evolving world of dental materials and the rapid development of new techniques allow today's practitioner to restore compromised dentition with unparalleled efficiency, either functionally or aesthetically. This session will review dental materials and techniques with an emphasis on prosthodontics and adhesive material applications.

The first portion of the course will review elastomeric impression materials, concepts of tooth preparation, temporization

and tray selection. In addition, a variety of impression techniques will be presented.

Then, techniques for implant impressions, new ceramo-metal systems and cementation will be presented. Dr. Boghosian will discuss adhesive materials and their application in the restoration of Class V lesions. This discussion will be based on the results of clinical research conducted at Northwestern University.

About the clinician >

Dr. Alan A. Boghosian practices restorative dentistry. He is Assistant Clinical Professor in the Division of Biological Materials at Northwestern University Dental School serving as Director of the Clinical Research Center. Dr. Boghosian is now serving as a member on the Council on Dental Materials, Instruments and Equipment of the American Dental Association.

This listing is only preliminary — more limited attendance courses will be added.



TERRY DONOVAN
D.D.S.
Los Angeles, CA



Update on Esthetic Restorative Dentistry

Contemporary restorative dentists have a host of options with which to help their patients. Many of these options are considerably less invasive than many of our conventional restorative therapies. Many patients present for esthetic restorative treatment, and are becoming increasingly sophisticated in their expectations of the final results. Additionally, manufacturers are bringing a myriad of new products to the market, often accompanied by a blizzard of information purported to demonstrate the benefits and efficacy of these new products.

This presentation will delineate the procedures essential for success with conventional and contemporary adhesive restorative dentistry. An objective comparative evaluation of many of the newer products on the market will also be given with an emphasis placed on clinical manipulation of these products.

Topics to be covered:

1. Essentials for soft tissue esthetics in fixed prosthodontics.
2. Effective gingival displacement.

3. New materials and techniques for fabrication of provisional restorations.
4. Review of impression materials.
5. New techniques with impression materials.
6. Solutions for fractured porcelain.
7. Metal bonding — mystery and myth.
8. Current thoughts on bonding to tooth structure.
 - enamel bonding, dentin bonding.
9. Conservative esthetic techniques.
 - bleaching, enamel microabrasion.
10. Bonded porcelain.
 - veneers, crowns, inlays, onlays.
 - use of bonded porcelain in full mouth rehabilitation.
11. Essentials for success in fixed prosthodontics.
12. Other current topics.

About the clinician >

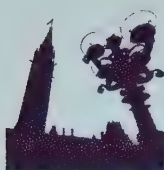
Dr. Donovan graduated from the University of Alberta before receiving his Certificate in Advanced Prosthodontics from the University of Southern California. After graduation, he held a number of positions at USC including Chairman, Section of Biomaterials Science; Chairman, Department of Restorative Dentistry; Director, Advanced Education in Prosthodontics; and Director, Restorative Clinical Research. Dr. Donovan has published extensively and has lectured world-wide on the topics of restorative dentistry and materials science.

TABLE CLINICIANS WANTED!



We have an opportunity for YOU to play an active part in the scientific program and share your scientific findings with your colleagues. The CDA Annual Meeting once again invites you to present a Table Clinic at the 1995 convention. A table clinic consists of a fifteen minute presentation followed by a question period for a total of twenty minutes. Your presentation is repeated as often as there is an interested audience within your two to three hour time slot.

For further details on how you can register to present a table clinic, please write or fax the CDA Convention Department or consult the blue pages in future issues of the CDA Journal.



OTTAWA 1995

Canadian Dental Association Annual Meeting
August 26 - 29 • 26 - 29 août
Réunion annuelle de l'Association dentaire canadienne

General Scientific Lectures

MARION BALLA

M.Ed., M.S.W.
Ottawa, ON

*"Effective Communication with
Staff and Clients in the Dental
Environment"*

*"Problem Solving Techniques
for the Dental Staff"*



W. CHARLES BLAIR

D.D.S.
Charlotte, NC

"Overhead Control That Makes Cents"



PIERRE BOUDRIAS

D.M.D., M.S.D.
Montreal, QC
Prosthodontics



SEBASTIAN G. CIANCIO

D.D.S., Dip. Perio.
Buffalo, NY

"Dentotherapeutics"

"Perio-Chemotherapeutics"



MICHEL COUTURE

D.M.D., Dip. Perio.
Montreal, QC
Periodontics



HAROLD L. CROSSLEY

D.D.S., Ph.D.
Baltimore, Rhode Island

*"Pharmacologic Update for the
Dental Practitioner"*



SHIMON FRIEDMAN

D.M.D.
Toronto, ON

*"Application of Glass Ionomer
Cements for Root Canal Filling"*

"Advanced Endodontics"



HELEN GRAD

M.Sc., Phm.
Ottawa, ON

Controversies in T.M.J



MIRIAM GRUSHKA

M.Sc., D.D.S., Ph.D.
Toronto, ON

Controversies in T.M.J.



ANITA JUPP

Burlington, ON

*"Teamwork and Success Go
Hand in Hand"*

*"Sharing a Common Vision for
Changes in Dentistry"*



JOHN KANCA

D.M.D.
Middleburg, CT

"Adhesive Dentistry"



SAM KUCEY

D.D.S., F.R.C.D.C., Dip. ABOMS
Ottawa, ON

*"Osseointegration Then and Now:
A 10 Year Retrospective Reviewing
the Impact of Osseointegration in the
Practice of Dentistry"*



MYER S. LEONARD

M.D., D.D.S.
Minneapolis, MN

*"Ups and Downs, Joys and Grievs of
Office Oral Surgery"*

*"All The Medicine You Wanted To Know
Without Going To Medical School"*



STANLEY MALAMED

D.D.S.
Los Angeles, CA
"Pain Control"



JOHN MCDUGAL

M.D.
Santa Rosa, CA
Nutrition



TERRY D. MYERS

D.D.S.
Walled Lake, MI

*"Different Types of Lasers and
Their Use"*

"Abrasive Technology Revisited 1995"



ROBERT SCHALLHORN

D.D.S., M.S.
Aurora, CA
Periodontics



CLYDE SCHULTZ

D.D.S.
San Francisco, CA
Practice Management



MARK SPATZNER

D.M.D., Dip. Perio.
Montreal, QC
Periodontics

This listing is only preliminary — more courses will be added.



Spouses' Program

If your spouse is planning to attend the CDA '95 Annual Meeting, you might want to take the following quiz and read to discover why you should attend the Convention.

1. The CDA Annual Meeting is for dentists only.
2. As a spouse, there's not much for me to do during the Convention.
3. I have to look after the children.
4. We cannot afford to all go to the CDA Annual Meeting.

True	False
☐	☐
☐	☐
☐	☐
☐	☐

If you have answered "True" to any of these statements, read on.

1. The CDA Annual Meeting is for every member of the dental team as well as for accompanying spouses. We have designed our scientific program to be of interest to you also. There will be lectures on a variety of subjects such as health, personal growth, finances, etc. Moreover, you will want to visit the trade exhibit where your spouse may decide to make a major purchase in which he/she will want you to be involved.
2. In addition to attending general interest lectures, you will have the opportunity to register for social events and organized visits and one day tours that are sure to please even the most discriminating of tastes. **Plus** if you are registered for the Convention, you can attend the Opening Ceremony.
3. Read below for details on the fantastic Children's Program which will be offered during the Annual Meeting. Your children will be safe with trained supervisors and they'll enjoy themselves thoroughly during the two days of activities.
4. This year, CDA members can register for the convention free of charge **AND** can also register two staff members for free. CDA'95 will be known as the "affordable convention".

Children's Program

Just a few words to describe the Children's Program (ages 6 - 12) at the CDA Annual Meeting. While moms and dads are busy attending lectures, visiting the exhibit hall or going on their own visits and one day tours, children can get together with others their own age and go on two fantastic, fun-filled, adventurous outings. **Take a look at our preliminary agenda:**

MONDAY, AUGUST 28

Museum of Science & Technology — Irresistible to children of all ages! Exhibits and displays encourage a hands-on approach to science with everything from trains to space and from printing presses to agriculture. Watch baby chicks being hatched and participate in EUREKA! the interactive science hall.

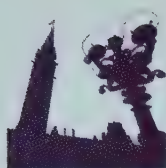
Wave Pool — There's not much summer fun without being in the water! This supervised indoor pool is great enjoyment with timed intermittent waves created throughout the pool. Great for those who love the water. The pool also has calm periods for those who just like to swim.

TUESDAY, AUGUST 29

Museum of Civilization — The Museum of Civilization features a lively Children's Museum where a guided tour takes the children to various civilizations and time periods around the world. Dressing up in time period clothing and taste testing foods from different cultures are part of this wonderful experience.

Afternoon at the Farm — Have a picnic lunch at the farm, then go on a hay ride! Fun and exciting activities are planned for the rest of your afternoon.

PLAN NOW TO ATTEND.
Watch for more details in future issues of the CDA Journal.



OTTAWA 1995

Canadian Dental Association Annual Meeting

August 26 - 29 • 26 - 29 août

Réunion annuelle de l'Association dentaire canadienne

CDA 1995 Out-of-Country Seminars

A wonderful opportunity to experience first hand how dentistry is practiced in different parts of the world. Choose a destination and, in addition to sightseeing, we'll arrange for you to visit dental clinics and dental practices. We'll set up meetings with members of the national dental association and offer lectures on areas of interest.

Whether you visit choose to Jerusalem, the City of Gold, ride an elephant in Jaipur, dance the night away to the sounds of lively Greek music, enjoy the adventure of shopping in a Turkish bazaar, or observe the wildlife on African reserves, CDA Out-of-Country Seminars let you appreciate the sights and sounds of each destination and benefit from professional exchanges with your colleagues in the country of your choice. (Tour descriptions are only highlights.)

— FDI 1995 —

Hong Kong: Gateway to the Orient

The 83rd World Dental Congress, FDI 1995, will take place in bustling Hong Kong, universally recognised as the 'Gateway to the Orient'. Jointly organized by the Hong Kong Dental Association and the World Dental Federation, the congress runs from October 23 to 27, 1995. The Congress itself will be held at the Hong Kong Convention and Exhibition Centre, on Hong Kong Island, overlooking Victoria Harbour.

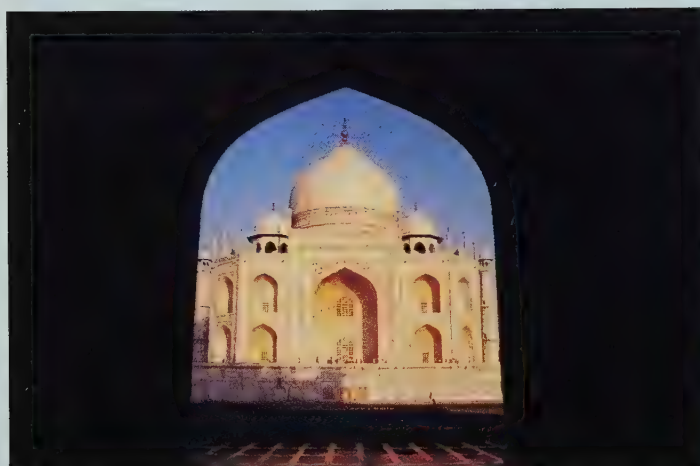
If you attended FDI 1994 in Vancouver, you'll certainly want to repeat the experience. If not, then here is your chance to experience a meeting where dental professionals from around the world gather for the World



Dental Congress. We have put together a package which comprises airfare plus 5 nights accommodation (with breakfast) in Hong Kong. Take in the sights of this vibrant city and attend a great convention.

Hong Kong's exotic locale presents exciting opportunities for tours and visits. For those of you who want to combine FDI 1995 with a holiday in the Far East,

we propose post-congress tours to Bali (October 26 - 30), China (October 26 - November 6), Bangkok and Singapore (October 26 - 31) and the Bunga Raya (Singapore, Malaysia and Bangkok — October 26 - November 5).



INDIA & NEPAL (March 8 - 24, 1995)

This tour is full of delights for those interested in the ancient and intriguing legacy of India and Nepal. Visit and tour both Old and New Delhi, attend the famous light and sound show at the Red Fort of Agra including a tour of the Fort and its museum and walk through a local bazaar. In Jodhpur visit the city palace museum, observatory and palace of winds. Ride a brightly decorated elephant to the 17th century Amber Fort! Visit the Taj Mahal monument. In Khajuraho visit the 9th to 13th century temples and take a tour of a Tibetan refugee camp.



TURKEY (April 19 - May 2, 1995)

A trip that will take you to the great Byzantine Basilica built in the 6th century, the Blue Mosque (a 17th century Ottoman mosque) and the Hippodrome where chariot races and athletic events took place during the Roman Empire! Also visit the Topkapi Palace, the residence of Ottoman sultans housing the richness of 700 years of rule, with its Baccarat crystal chandeliers, persian carpets, priceless art and treasures. Turkey is home to a grand collection of art from many civilizations throughout the centuries. Enjoy the adventures of the Grand Bazaar and visit old cities such as Antalya and Pumukkale — where you can enjoy a swim in the hot spring pools!



GREECE (June 17 - July 1, 1995)

Enjoy visiting the city of Athens with a tour of the Acropolis. From Athens embark on a classical tour of Greece with visits to ancient Corinth and its museum, Epidaurus, Mycenae and Nauplia. In Olympia, visit the Sanctuary of Zeus, and the place where the Olympic Games had their origins. In Mykonos visit markets, beaches and enjoy fresh seafood and local entertainment. Get set also for a 4-day Greek Island Cruise with touring opportunities in Patmos, Kusadasi, Heraklion and the mountainous and beautiful Santorini.

KENYA (July 13 - 27, 1995)

Your safari begins at the Masai Mara Game Reserve, Kenya's richest reserve. Observe large free-roaming herds on the plains including the Big Five (Elephant, Lion, Leopard, Buffalo and Rhino). Also admire the Wildebeest, Gazelle and Zebra. At the Aberdare National Park visit The Ark, a unique lodge overlooking a large salt lick and waterhole that attracts wildlife both day and night. Enjoy the Samburu Reserve where the elephant, buffalo, cheetah, lion and leopard roam uninhibited. Be entertained by mischievous monkeys and watch sleeping crocodiles sun themselves at the river's edge.



**For more information on any of the above tours, contact Tourcan
at 1-800-263-2995 or CDA Conventions at 1-800-267-6354.**



OTTAWA 1995

Canadian Dental Association Annual Meeting
August 26 - 29 • 26 - 29 août
Réunion annuelle de l'Association dentaire canadienne



The Price is Right!

No, it isn't a game show or a clearance sale, it is the CDA Annual Meeting!

What could be better than attending the annual convention for **FREE** and bringing two staff members with you **ABSOLUTELY FREE** also?! That's just what we've done for the CDA 1995 Annual Meeting.

CDA members who register *before July 21, 1995* can register for free and all Canadian dentists who register before July 21st can register two staff members for free. Savings for everyone!

"Teaming Up in '95" is the theme for this year's meeting and we want to see as many dental teams as possible attending together.

Enrolment Forms

Registration and hotel reservation forms for the CDA 1995 Annual Meeting will be available in the Preliminary Program which will be sent to you soon as well as in the March issue of the CDA *Journal*.

Visits and One-Day Tours

Preliminary Agenda —

— MONDAY, AUGUST 28 —

Ottawa City Tour and National Gallery of Canada

Enjoy a leisurely bus tour throughout the city of Ottawa, taking in the history that has helped shape our nation. Next have lunch at the National Gallery of Canada followed by a tour through the gallery where you'll admire pieces that have been chosen to celebrate and preserve Canada's cultural heritage.

— TUESDAY, AUGUST 29 —

Day Trip to Merrickville

Visit the charming town of Merrickville, established in 1793. This historical town is a glimpse back in the past with streetscapes reminiscent of early 19th century architecture, antique shops, museums, saw and grist mill ruins and canal locks. Included in this day trip is an historical sightseeing tour, lunch at a quaint inn and shopping in the town's delightful galleries, antique shops and craft stores.



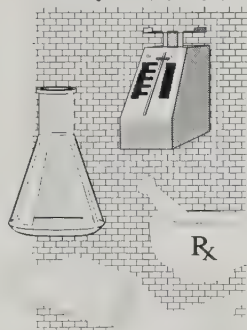
Participaction in Action!

**Not only can you challenge your mind at the
CDA Annual Meeting but you can also challenge your fitness too!**



The Annual Fun Run will take participants through Ottawa's beautiful parks and trails. This is an activity for all levels of fitness — there will be a 5 and 10 kilometer run for those who are keen athletes and a 5 kilometer walk for those who like to get a fresh start to their day and enjoy the outdoors. Times will be recorded and refreshments available. You will find a section on the enrolment form to register for this event.

PHARMACOLOGY



Benzydamine Hydrochloride (Tantum) In the Management Of Oral Inflammatory Conditions

R.S. Turnbull, DDS, Dip. Perio., M.Sc.D.

ABSTRACT

Benzydamine HCL (Tantum) is a topical nonsteroidal anti-inflammatory drug (NSAID) with anti-inflammatory, analgesic, antipyretic and local anesthetic activity. This paper reviews the pharmacology of benzydamine and surveys the existing literature relating to its applications in medicine and dentistry. Guidelines for its use in dentistry are offered.

SOMMAIRE

Le chlorhydrate de la benzydamine (Tantum) est un anti-inflammatoire non stéroïdien à usage topique qui possède des propriétés anti-inflammatoires, analgésiques et antipyrétiques; on s'en sert pour des anesthésies locales. Dans cet article, on en révisé la pharmacologie ainsi que la documentation actuelle touchant ses applications en médecine et en dentisterie. Enfin, on offre des directives pour son usage en dentisterie.

Introduction

Benzydamine is a topical nonsteroidal anti-inflammatory drug (NSAID) with anti-inflammatory, analgesic, antipyretic and local anesthetic activity.¹ It is also reported to have antihelminthic properties, as well as a degree of antibacterial and antifungal activity.²

Since its introduction in 1965, benzydamine has been available

worldwide under a number of proprietary trade names, including Tantum, Difflam, Benzylin, Riripen, and Imotryl, and has been used in the treatment of a wide range of painful inflammatory conditions. From 1965-1975, more than 4.5 million bottles of benzydamine oral rinse were dispensed with no reports of significant untoward side effects.³

In Canada, benzydamine (Tantum Oral Rinse, 3M Pharmaceuticals, London, Ontario) is approved for the symptomatic treatment of acute sore throat and oropharyngeal mucositis due to radiation therapy. Although the potential uses of benzydamine in dentistry have not been widely investigated, it is clear that an oral rinse with anti-inflammatory and analgesic properties would be a welcome addition to the therapeutic armamentarium of dentists. At present, benzydamine oral rinse is the only topical agent with these properties that is available in Canada. It is therefore somewhat surprising that relatively little attention has been focused on the use of benzydamine in dentistry, where an oral rinse with combined analgesic and anti-inflammatory effects would be useful in reducing the pain and inflammation associated with scaling or dental surgery. In addition, such an agent could be effective in the symptomatic treatment of inflammatory conditions of the mouth, such as aphthous ulcers and gingivitis,

which are often encountered by dental practitioners.

This paper reviews the pharmacological characteristics of benzydamine and surveys the existing literature relating to its applications in medicine and dentistry. Additionally, attention is drawn to certain medical oropharyngeal inflammatory conditions that dentists may encounter in daily practice that may be amenable to treatment with benzydamine.

Pharmacology Of Benzydamine

Traditionally, two broad classes of drugs — the corticosteroids and the NSAIDs — have been used in the treatment of inflammatory conditions. Corticosteroids suppress inflammation by inhibiting the immune response to tissue damage, while the anti-inflammatory effect of the NSAIDs is based on their antidenaturant and anticoagulant effects on serum proteins. For most NSAIDs, these effects are thought to be mediated by suppression of prostaglandin synthesis.⁴

Biochemistry

Although benzydamine is properly a NSAID, it possesses a unique molecular structure that distinguishes it from traditional NSAIDs. Benzydamine, a salt of 1-benzyl-3[3-(dimethyl-amino)propoxy]-1 H-indazole, is an indazole substituted in position 3 (**Fig. 1**). Unlike other NSAIDs, which are acidic, benzydamine has an alka-

JOURNAL

February/
Février
1995
Vol. 61
No. 2

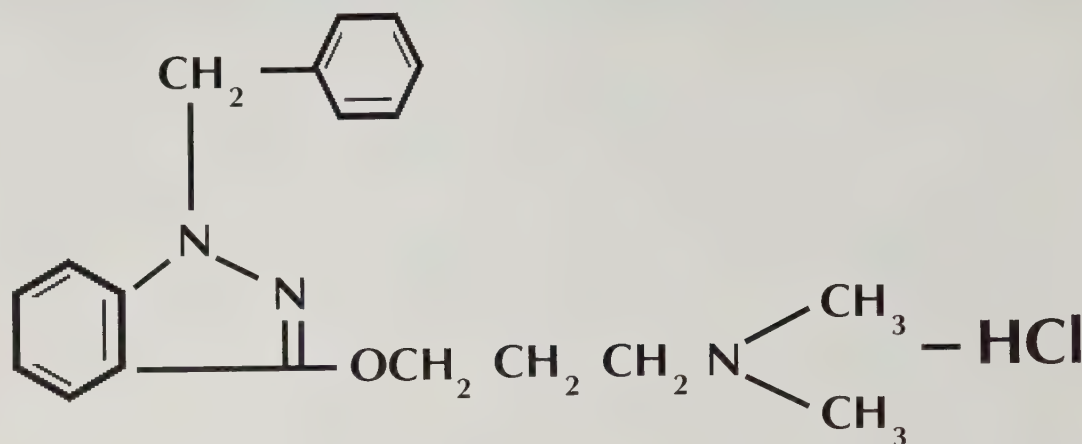


Fig. 1: The molecular structure of benzydamine hydrochloride.

line pH.⁵ In fact, the alkaline nature of benzydamine is responsible for the unusual distribution of the drug following systemic administration. Specifically, benzydamine tends to concentrate in inflamed tissues. The concentration in healthy tissue remains low or negligible, as shown in animal studies.⁶

Pharmacokinetics

The plasma concentrations of benzydamine in healthy subjects, following its topical application as an oral rinse, have been determined in two separate studies. In one randomized crossover trial, a dose of 25.5 mg/70 kg body weight was either ingested or administered as an oral rinse for 20 seconds.⁷ When administered as an oral rinse, the total quantity of benzydamine absorbed was 9.7 mg/70 kg. The observed plasma concentrations were well below those seen after ingestion of the drug. However, when the doses were adjusted to account for the different amounts of drug absorbed, there was no significant difference between the plasma concentrations obtained by rinsing and expectorating versus orally ingesting the drug.

These results were corroborated by a second study that examined the pharmacokinetics of repeated oral administration of benzydamine (by ingestion or as a rinse) in healthy volunteers.⁸ Benzydamine was ingested orally (6.38 mg/70 kg) or as an oral rinse (2.69 mg/70 kg) four times daily at five-

hour intervals for seven days. The study determined that steady-state plasma levels were reached within 24 to 48 hours of treatment, and that peak plasma concentrations of benzydamine following administration as a rinse were low (ranging from 30 to 40 ng/mL). There was no evidence of accumulation of benzydamine with repeated administration.

Further investigations of the pharmacokinetics of benzydamine were undertaken more recently by Baldock et al.⁹ They determined that benzydamine is characterized by a relatively low rate of systemic clearance (160 mL/min) and a high volume of distribution. The apparent terminal half-life in plasma was approximately eight hours. Although benzydamine was well absorbed following oral administration, with a mean systemic bioavailability of 87 per cent, absorption was low (< 10 per cent of the dose) when benzydamine was applied topically as a vaginal cream or an oral rinse. The authors concluded that benzydamine is not well absorbed through the skin or nonspecialized mucosa, and that this property of benzydamine helps to limit systemic exposure to the drug when it is applied topically.

Anti-Inflammatory Effects

Although benzydamine is nominally a NSAID, it differs from traditional NSAIDs and other anti-inflammatory drugs in several key respects. Unlike most NSAIDs, which are thought to derive their

anti-inflammatory effects through inhibition of prostaglandin synthesis, benzydamine selectively inhibits the production of a number of prostaglandins, but it may also potentiate the synthesis of certain other types.^{10,14} The differential effects of benzydamine on prostaglandin synthesis may account for the observations, in animal models, that benzydamine is virtually devoid of the ulcerogenic effects common to traditional NSAIDs, and may even exert a protective effect against gastric lesions induced by aspirin or alcohol.¹¹

In various animal models, benzydamine has been found to be effective in reducing the inflammation induced by a wide range of irritants. As this broad and nonselective spectrum of anti-inflammatory activity is not generally exhibited by other NSAIDs,¹²⁻¹⁵ it has been suggested that benzydamine may act at a site that is common to the inflammatory processes induced by a wide range of irritants.¹ In contrast to the corticosteroids and the antirheumatic NSAIDs, the anti-inflammatory effects of benzydamine are restricted to primary or normoreactive inflammatory processes — the drug is inactive against inflammation sustained by dysreactive systemic conditions.¹⁶ Moreover, as has already been noted, benzydamine has the unique property of concentrating mainly in inflamed tissues.⁶ In primary inflammation therapy, where the objectives are to localize therapy to the site of inflammation



while not impairing the defensive and restorative capacities of the involved tissues, these properties are highly desirable.

Benzylamine stabilizes cell membranes, however, in contrast to other NSAIDs, this activity is not related to protein stabilization. In fact, benzylamine inhibits induced vasodilation in capillaries¹⁰ and induced vasoconstriction in larger blood vessels.¹⁷ It also inhibits platelet aggregation, thrombus formation, and the degranulation of human polymorphonuclear leukocytes, which are important factors in inflammatory processes.^{18,19}

Analgesic and Local Anesthetic Effects

In addition to its anti-inflammatory effects, benzylamine has analgesic and local anesthetic effects.¹ As with other NSAIDs, the analgesic effect of benzylamine is greatest against pain arising from anti-inflammatory processes. The local anesthetic effects of benzylamine, which are not common among the NSAIDs, have been demonstrated in animal models and in clinical trials with human subjects. In various animal models, benzylamine has been found to be about half as potent as tetracaine in this respect.¹² In one study involving healthy human subjects, benzylamine oral rinse (0.15 per cent solution) was found to exert a potent and long-lasting (up to 90 minutes) local anesthetic effect, and to be superior to cetylpyridinium and placebo mouthwashes in that regard.²⁰

Antiseptic Effects

When applied as a topical oral rinse, benzylamine has a degree of nonspecific antiseptic activity. Minimum inhibitory concentrations (MICs) of 150-500 µg/mL have been reported for *K. pneumoniae*, *S. aureus*, *S. faecalis*, *E. coli*, and other organisms, and MICs of 1,000 and 2,000 µg/mL have been reported for *P. vulgaris* and *P. aeruginosa*, respectively.⁸ In a more recent study, the antimicrobial activity of benzylamine in concentrations ranging from 0.05 per cent to 0.15 per cent was evaluated for 38 strains belonging

to 12 microbial species (bacteria, yeasts, and fungi). The authors concluded that benzylamine is a general and fast-acting antimicrobial agent at concentrations lower than those recommended for the treatment of inflammatory conditions.²¹

Toxicology

Silvestrini et al assessed the toxicology of benzylamine in a variety of animal species and reported that the doses required to produce significant toxicity were far in excess of doses recommended for therapeutic use in humans.²² With oral administration, LD₅₀ values were 515 mg/kg and 1,050 mg/kg in mice and rats, respectively, which are several hundred times higher than the recommended therapeutic dose (0.7 - 1.0 mg/kg). Although some animals died when given a single daily dose of 500 mg/kg, no deaths occurred in animals receiving the same daily dose in meals over the course of the day, suggesting that lethality resulted from acute pharmacological effects rather than from cumulative pathological changes attributable to the drug. With chronic administration, a depression of the growth rate and an enlargement of the liver were observed in mice and rats given high doses of benzylamine (100-200 mg/kg) for periods ranging from one to three months, but no changes to liver function, histologic structure of the major organs, hematologic parameters, or reproduction were noted.

Benzylamine has been administered for the treatment of a wide range of inflammatory conditions for almost 30 years, with no reports of significant untoward side effects. Of the adverse reactions that have been reported in patients receiving therapeutic doses, the most frequent were local numbness (9.7 per cent), local burning or stinging (8.2 per cent), and nausea or emesis (2.1 per cent). Throat irritation, cough, dryness of the mouth and thirst, drowsiness, and headache have also been reported, but less frequently.⁸

Therapeutic Use Of Benzylamine

Benzylamine has been widely and extensively used by the medical community for the treatment of inflammatory conditions, particularly in gynecological and oropharyngeal settings. In Canada, benzylamine oral rinse is indicated for the symptomatic treatment of pharyngitis and radiation mucositis. However, its potential for use in dentistry and oral surgery has largely been overlooked. This is somewhat surprising, as benzylamine oral rinse is the only topical agent available in Canada with anti-inflammatory and analgesic properties. A review of the medical experience with benzylamine and a survey of the existing literature on benzylamine's applications in dentistry is therefore warranted. The objective, here, is to identify potentially useful applications of benzylamine in dentistry and oral surgery.

Pharyngitis

The majority of cases of sore throat are of viral origin and are not amenable to treatment with antibiotics. Most of these cases are self-limiting, and treatment is limited to the symptomatic management of pain and dysphagia until the viral infection has run its course. Treatment with benzylamine in this setting has been evaluated in a number of clinical trials.

Froom and Boisseau evaluated the analgesic and anti-inflammatory effects of benzylamine in a placebo-controlled trial involving 41 patients with sore throats of various etiologies.³ They reported that 82 per cent of the patients who received benzylamine derived moderate or better relief from pain and dysphagia, compared to 47 per cent in the placebo group, and that this difference was statistically significant. Their findings also suggested a cumulative effect of the active drug, as patients' pre-dose evaluations of pain severity decreased steadily and significantly over the course of the trial.

**Table 1**

Antiplatelet and Anti-Inflammatory Effects and Promotion Of Healing With Benzydamine Oral Rinse Following Periodontal Surgery

	Mean plaque index* (SD)		Mean gingival index† (SD)		Mean healing index‡ (SD)	
	Placebo	Benzydamine	Placebo	Benzydamine	Placebo	Benzydamine
Day 0	0.09 (0.27)	0.26 (0.63)	1.46 (2.61)	1.07 (1.75)	—	—
Day 1	8.60 (4.08)	1.50 (1.68)	10.85 (3.61)	7.13 (3.57)	4.14 (0.89)	4.25 (0.90)
Day 3	10.29 (4.16)	1.55 (1.16)	9.94 (4.07)	5.17 (3.07)	4.25 (0.90)	7.29 (1.38)
Day 7	11.83 (4.01)	1.66 (1.71)	10.01 (3.10)	3.87 (2.82)	5.29 (1.23)	7.70 (1.19)

Adapted from Landry et al³⁸

* Plaque index scoring range: 0.00 to 18.00.

† Gingival index scoring range: 0.00 to 18.00.

‡ Healing index scoring range: 2.00 to 10.00.

In a double blind, placebo-controlled trial of benzydamine involving 52 patients with sore throat or tonsillitis, conducted by Whiteside in 1982, patients who received benzydamine had faster resolution of pain and dysphagia.²³ By the third day of treatment, the patients' assessments of the severity of symptoms and dysphagia had been reduced significantly in the active treatment group, and 88 per cent of these patients were symptom-free after seven days. By comparison, only 38 per cent of the patients on placebo were symptom-free after seven days, and these patients' subjective assessments of symptom severity were not significantly reduced until the fifth day of the trial.

Chudoba evaluated benzydamine oral rinse as a treatment for chronic pharyngitis in 24 recently-tonsillectomized patients.²⁴ In his double-blind, placebo-controlled trial, 75 per cent of the patients who received benzydamine were judged to have been successfully treated, as compared to 25 per cent of the patients on placebo.

In each of these trials, compliance and acceptance of benzydamine were reported to be very good, and no serious side effects were reported.^{3,23,24} Froom and Boisseau reported that 14 patients experienced transient oral numbness after rinsing with benzydamine, but noted that this was probably due to the local anesthetic effects of the drug.³

Radiation Mucositis

Mucositis is a frequent and sometimes severe complication in patients receiving either radiation therapy in the oropharyngeal region or cancer chemotherapy.^{25,26} This may arise as a direct consequence of injury or toxicity to the cells of the epithelium, or it may occur indirectly as a result of myelosuppression in patients receiving chemotherapy on bone marrow. In either case, the breakdown of the mucosal barrier leads to considerable discomfort and reduced food intake, and may interfere with the course of therapy, thereby reducing the likelihood of a successful outcome. Importantly, particularly for myelosuppressed patients, mucositis also opens a window to infection by microorganisms at a time when the patient's ability to defend against infection is compromised.

Joel Epstein and his colleagues at the Cancer Control Agency of British Columbia assessed the anti-inflammatory effect of benzydamine oral rinse and its potential for the prevention and management of radiation mucositis.²⁷ A total of 49 patients who were to receive three- or five-week fractionated radiotherapy in the oropharyngeal region were randomized to receive benzydamine oral rinse (25 patients) or placebo (24 patients) in double-blind fashion. All of the patients who received benzydamine completed the trial, while six of the patients

on placebo dropped out for reasons of inefficacy. Statistically significant differences in total and maximum mucositis scores, and in the average area of mucositis observed during the course of the trial, led the authors to conclude that benzydamine oral rinse was effective in preventing mucositis during radiation therapy. Approximately equal numbers of patients in each group required systemic analgesics or used viscous lidocaine at some time during the trial, although patients in the placebo group started using systemic analgesics sooner and continued to use lidocaine for longer periods of time than did patients in the benzydamine group. Patients who received benzydamine tended to report greater reduction in symptom severity, although these differences were not statistically significant.

Although benzydamine is only indicated for radiation mucositis in Canada, the results of an open, pilot study undertaken by Sonis et al suggest that it may also be a useful oral prophylactic for patients receiving cancer chemotherapy.²⁸ Benzydamine was administered over a period of not less than four days to nine chemotherapy patients with objective signs of mucositis. Patients were instructed to rinse and gargle with benzydamine for 20 seconds every three hours while they were awake. Seven patients subjectively assessed their pain relief as at least

**Table II**

Pain Reduction With Benzydamine Oral Rinse Following Periodontal Surgery

	Mean pain reduction* (SD)	
	Placebo	Benzydamine
Day 0	1.48 (7.84)	16.45 (11.12)
Day 1	-0.09 (0.56)	5.20 (5.53)
Day 2	0.09 (0.29)	1.07 (2.22)
Day 3	0.00 (0.00)	0.00 (0.00)
Day 4	0.00 (0.00)	0.00 (0.00)
Day 5	0.11 (0.32)	0.74 (1.69)
Day 6	0.10 (0.49)	3.15 (3.36)
Day 7	-0.35 (1.21)	6.02 (4.03)

Adapted from Landry et al³⁸

* Differences between absolute pain levels before rinsing and 30 minutes thereafter.

"good," and seven stated that they would use benzydamine again.

For their objective analysis, the authors considered patients with hematological malignancies (who were severely leukopenic and therefore unlikely to be capable of mounting an effective inflammatory response) separately from those with solid tumors. They reported improvements in mucositis and erythema in both groups of patients, and noted that the leukopenic patients obtained satisfactory palliation lasting up to three hours after dosing. This latter finding suggests that the analgesic effects of benzydamine are independent of its anti-inflammatory properties.

Inflammatory Conditions In Gynecology

In Europe, benzydamine has also been used to treat inflammatory conditions of the vagina. Mega et al investigated the use of the topical application of benzydamine, as a vaginal douche, to treat 124 patients with vaginitis of various etiologies in a double-blind, placebo-controlled study.²⁹ Benzydamine or placebo douches were given as an adjunct to standard therapy with antibiotic, antimycotic, or antitrichomal agents, where such treatment was indicated. The authors reported that benzydamine had a curative effect

in patients with mild, nonspecific vaginitis, and that it may have potentiated the effects of standard therapy in patients with moderate or severe vaginitis of bacterial, monilial, or trichomal origin.

In another study, Catanese et al demonstrated that serum concentrations of benzydamine after topical application as a vaginal douche were lower than those that would be obtained by systemic administration, thus minimizing the risk of systemic side effects.³⁰

Aphthous Stomatitis

Aphthous ulcers, commonly known as canker sores, are among the most common oral lesions seen by dentists.³¹ These painful and recurrent lesions are often stubbornly resistant to modern medical and dental therapy, and are often associated with medical conditions such as AIDS, Sutton's disease, Behçet's disease, Reiter's syndrome, leukopenia, Crohn's disease, and ulcerative colitis.^{32,33} They may also occur as a side effect of antineoplastic therapy.³⁴

Studies that have been conducted to evaluate benzydamine oral rinse as a palliative treatment for aphthous ulcers suggest that it may be useful in relieving the pain associated with these lesions. Yankell et al compared benzydamine and placebo rinses in a double-blind crossover trial in-

volving patients with aphthous ulcers, and reported that 61 per cent of the patients who received benzydamine experienced a reduction in pain severity of at least 50 per cent, as compared to 22 per cent of the patients on placebo.³⁵ Except for increased reports of tissue numbness with benzydamine, there were no essential differences in the kinds and incidences of reported side effects.

Matthews et al compared benzydamine, chlorhexidine, and placebo mouthwashes in the management of recurrent aphthous ulcers in a double-blind crossover trial involving eighteen patients.³⁶ Although they found no significant differences between treatments with respect to the number and size of ulcers or the severity of pain, eight patients expressed a preference for benzydamine, citing the local anesthetic effect as the main reason for their preference.

Management Of Pain and Inflammation Following Dental Surgery

Although a wide range of NSAIDs has been used to relieve inflammation in postoperative periodontal patients, most of these require systemic administration and are devoid of any anesthetic effects.³⁷ In principle, therefore, a topical NSAID with a local anesthetic effect would be useful in reducing the risk of systemic side effects and would provide patients with more immediate and satisfactory relief of postoperative pain.

To evaluate this hypothesis, Landry and Turnbull investigated the use of benzydamine oral rinse in 13 patients who underwent a total of 20 pairs of surgical procedures.³⁸ In their double-blind, crossover trial, patients rinsed with benzydamine or a placebo every four hours, except during sleep, for a period of seven days following surgery. Patients were permitted to use other analgesics, if required. Plaque and gingival indices were employed prior to surgery, and after one, three, and seven days of treatment, to assess the antiplaque and anti-inflammatory effects of treatment. Healing was evaluated after one, three, and seven days.



Pain relief was assessed by comparing the absolute levels of pain immediately before and 30 minutes after rinsing. By each of these outcome measures (plaque, gingival, and healing indices and pain relief), benzydamine was statistically superior to placebo (**Tables I and II**).

In the Landry and Turnbull study, the authors suggest that the improvements observed with benzydamine treatment were dependent on the method of administration. Benzydamine administered to patients as an oral spray following third molar extraction has been reported to result in improved clinical course in patients, with objective antiseptic and analgesic effects.³⁹ On the other hand, Hunter reported no significant effects on swelling and trismus following the extraction of impacted third molars in patients administered benzydamine 50 mg tablets four times daily, relative to placebo.⁴⁰ Topical administration permits benzydamine to concentrate in the inflamed tissues, while minimizing systemic exposure to the drug, and allows the patient to benefit from its local anesthetic effects.¹⁸

Other Uses Of Benzydamine In Dentistry

In addition to its applications in dental surgery, benzydamine oral rinse might be of benefit to patients undergoing more routine dental procedures, such as scaling. Patients with recently fixed orthodontic appliances may experience irritation and ulceration of the oral mucosa, and benzydamine could prove to be useful for these patients. Asher and Shaw evaluated this possibility in a placebo-controlled study involving 68 patients with recently fixed orthodontic appliances, and noted no significant prophylactic or palliative effects.⁴¹ However, the levels of discomfort experienced by patients in either group were quite low, and it is possible that this may account, in part, for the lack of response in either treatment group.

Dosing and Administration

When benzydamine is used for the prophylaxis or treatment of ra-

diation mucositis, a dose of not less than 15 mL should be administered three or four times a day as an oral rinse or gargle. Patients should be instructed to hold the solution in contact with the inflamed mucosa for at least 30 seconds before expectorating. Administration should begin on the day preceding the commencement of radiation therapy and continue daily over the course of treatment. If radiation mucositis develops, treatment with benzydamine should continue until the patient's condition improves.⁴²

For the treatment of acute sore throat, patients should be instructed to gargle with 15 mL of the supplied 0.15 per cent solution of benzydamine for at least 30 seconds every 1.5 to three hours. For the relief of pain due to aphthous ulcers, 15 mL of benzydamine should be administered full strength as an oral rinse every three or four hours.

After periodontal surgery, if no dressing is applied to the area, rinsing every four hours for seven days, except during sleep, is suggested.³⁸

Patients with severe ulcerations may experience some stinging when using the supplied benzydamine solution at full strength. If these patients are unable to tolerate benzydamine at full strength, the supplied solution may be diluted 1:1 with warm water.

Conclusions

Benzydamine is a topical NSAID with anti-inflammatory, analgesic, and local anesthetic activity. With topical application as an oral rinse, it has the unique property of concentrating in inflamed tissues, thereby focusing its therapeutic actions where they are most required and limiting systemic exposure to the drug. At present, benzydamine is the only topical agent with analgesic and anti-inflammatory properties available in Canada that is suitable for use as an oral rinse.

Given its long history of use in medicine for the treatment of oral inflammatory conditions, it is surprising that more attention has not been focused on the potential applications of benzydamine oral

rinse in dentistry. Most of the studies that have been carried out to date suggest that benzydamine oral rinse can be used effectively by dental patients to reduce plaque, gingivitis, inflammation, and pain, and that it can promote healing in a number of conditions. Further controlled trials of benzydamine oral rinse in these settings may help to establish an important new role for benzydamine in dentistry. ■

Dr. Turnbull is an associate professor in the department of periodontics, faculty of dentistry, University of Toronto, and is engaged in the private practice of periodontics in Toronto.

Reprint requests to: Dr. Robert Turnbull, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ont. M5G 1G6.

References

1. White, S.K. The pharmacology of benzydamine. *Res Clin Forums* 10(8):9-23, 1988.
2. Data on file. 3M Pharmaceuticals, London, Ontario.
3. Froom, J. and Boisseau, V. Benzydamine oral rinse for sore throat. *Curr Ther Res* 26(6):856-861, 1979.
4. Lisciana, R., Scorza-Barcelona, P. and Silvestrini, B. Research on the topical activity of benzydamine. *Eur J Pharmacol* 3:157-162, 1968.
5. Palazzo, G., Corsi, G., Balocchi, L. et al. Synthesis and pharmacological properties of 1-substituted 3-dimethylaminoalkoxy-1H-indazoles. *J Med Chem* 9:38-41, 1966.
6. Giacalone, D. and Valzelli, L. A method for the determination of 1-benzyl-3-(3-(dimethylamino)propoxy)-indazole (benzydamine) in rat tissues. *Med Pharmacol Exp* 15:102-106, 1966.
7. Jainchill, J., Schor, J.M., Weinstein, S.H. et al. *Bioavailability of benzydamine in humans — comparison of treatments acute and subacute administration*. Endo Laboratories, New York: unpublished report, 1975.
8. Product monograph, Fig. 2.
9. Baldock, G.A., Brodie, R.R., Chasseaud, L.F. et al. Pharmacokinetics of benzydamine after intravenous, oral, and topical doses to human subjects. *Biopharm Drug Dispos* 12(7):481-492, 1991.
10. Tsurumi, K., Hiramatsu, Y., Nozaki, M. et al. Pharmacological actions of tiaramide hydrochloride: a new anti-inflammatory drug. *Arzneim Forsch* 35(5a):614-617, 1987.



*Dr. Richard Rayman
Willowdale, Ontario*



**Member
Services**

**Working
on Your
Behalf**

Get 30% more car and 100% fewer headaches with the CDA Leasing Program!

Getting a new car today can be a real hassle. Travelling from car lot to car lot, zealous salespeople — it can all add up to an unpleasant and time-consuming experience.

Unless you do what more and more of your colleagues are doing. Just call CDA Leasing and let them do the shopping for you. They can get any vehicle you want, North American or import. And, their fleet purchasing power, combined with the advantages of leasing, means you can drive the vehicle you want for about 30% less per month than if you financed through your bank. Keep the difference in your pocket, direct it towards other worthwhile investments, or get the next model up, with all the goodies, for the same budgeted payment!

CDA Leasing will handle the whole transaction, from helping to identify the make, model, and options that best suits you, to localized purchase and delivery of your new car. They can even help you dispose of your existing vehicle. CDA Leasing documents are simple and straightforward, with terms that can be tailored to exactly meet your needs. And, you can drive all you want. No kilometer restrictions! A guaranteed purchase option on every lease!

Make obtaining your next new vehicle headache-free and save money too — call CDA Leasing at 1-800-461-2923 today! They'll be happy to explain why dental professionals across Canada are turning to CDA Leasing.



CDA Leasing / Location ADC

7100 Woodbine Ave., Suite 400, Markham, Ont. L3R 5J2
Telephone: (905) 477-5210, Toll-Free 1-800-461-2923



11. von Hell, I. Experimentelle Befunde zur gastralen Ulzerogenität und Ulkusprotektion von Benzydamin bei der Ratte. *Arzneim Forsch* 37(5a):629-631, 1987.
12. Cioli, V., Corradino, C., Scorza-Barcelona, P. Review of pharmacological data on benzydamine. *Int J Tiss React* 7:205-213, 1985.
13. Silvestrini, B. General implication from a study on the anti-inflammatory activity of benzydamine. In: *Proceedings of an International Symposium on Non-steroidal Anti-inflammatory Drugs*. Excerpta Medica International Congress Series No. 82:180-189.
14. Silvestrini, B., Garau, A., Pozzatti, C. et al. Pharmacological research on benzydamine — a new analgesic anti-inflammatory drug. *Arzneim Forsch* 16:59-63, 1966.
15. Takashima, T., Kadoh, Y. and Kumada, S. Pharmacological investigations of benzothiazoline derivatives. *Arzneim Forsch* 22:716-723, 1972.
16. Boissier, J.R., Lhoff, J.M. and Hertz, F. Action comparee de six anti-inflammatoires non-steroidiques therapie. *Ther* 25:43-60, 1970.
17. Yamatake, Y., Kato, H. and Tagaki, K. Effects of vasoactive agents on the canine fore-limb venous perfusion preparation and their modification by anti-inflammatory drugs. *Jap J Pharmacol* 25:129-139, 1975.
18. Carco, F.P., Dionisi, D., de Feo, V., et al. Effetti della benzydamina sulla velocita di traslazione dei granulociti e dei macrofagi umani di focalai di infiammazione sterile (Ricerca *in vivo* ed *in vitro*). *Arch Med Int* 18:113-121, 1966.
19. Gorog, P. and Kovacs, I. The alteration of platelet behavior during various conditions and the effects of anti-inflammatory agents on platelet aggregation and thrombus formation. In: *Inflammatory Biochemistry and Drug Interactions*, Bertelli, A. and Houck, J.C., eds). Amsterdam: Excerpta Medica, 1969.
20. Simard-Savoie, S. and Forest, D. Topical anaesthetic activity of benzydamine. *Curr Ther Res* 23(6):734-745, 1978.
21. Fanaki, N.H. and el-Nakeeb, M.A. Antimicrobial activity of benzydamine, a non-steroidal anti-inflammatory agent. *J Chemother* 4(6):347-352, 1992.
22. Silvestrini, B., Scorza-Barcelona, P., Garau, A. et al. Toxicology of benzydamine. *Toxicol Appl Pharmacol* 10:148-159, 1967.
23. Whiteside, M.W. A controlled study of benzydamine oral rinse ('Diffiam') in general practice. *Curr Med Res Opin* 8(3):188-190, 1982.
24. Chudoba, V.A. Benzydamine hydrochloride: oral rinse for chronic pharyngitis in tonsillectomized patients. *Mod Med Canada* 38(11):1388-1392, 1983.
25. Bernhoft, C.H. and Skuag, N. Oral findings in irradiated edentulous patients. *Int J Oral Surg* 14:416-427, 1985.
26. Sonis, S.T., Sonis and A.L., Lieberman, A. Oral complications in patients receiving treatment for malignancies other than of the head and neck. *JADA* 97:468-472, 1978.
27. Epstein, J.B., Stevenson-Moore, P., Jackson, S. et al. Prevention of oral mucositis in radiation therapy: a controlled study with benzydamine hydrochloride rinse. *Int J Radiation Oncology Biol Phys* 16:1571-1575, 1989.
28. Sonis, S.T., Clairmont, F., Lockhart, P.B. et al. Benzydamine HCl in the management of chemotherapy-induced mucositis. *J Oral Med* 40(2):67-71, 1985.
29. Mega, M., Marcolin, D., Maggino, T. et al. Therapeutic effects of topical benzydamine in gynecology. *Clin Exp Obstet Gynecol* 7(1):25-36, 1980.
30. Catanese, B., Facchini, V., Barillari, G. et al. Serum levels of benzydamine following topical use for this drug in gynecology. *Clin Exp Obstet Gynecol* 7:84-88, 1980.
31. Rybokov, A.I., Kulikova, V.S. and Terekhova, N.V. Recurrent aphthous stomatitis and body reactivity. *Int Dent J* 24(2):328-333, 1974.
32. Epstein, J.B. and Mathias, R.G. Oral manifestations of human immunodeficiency virus infection. *Can Fam Physician* 34:1773-1780, 1988.
33. Antoon, J.W. and Miller, R.L. Aphthous ulcers — a review of the literature on etiology, pathogenesis, diagnosis, and treatment. *JADA* 101:803-808, 1980.
34. Sonis, S.T., Sonis, A.L. and Lieberman, A. Oral complications of cancer chemotherapy in pediatric patients. *Periodontol* 3:122-128, 1979.
35. Yankell, S.L., Welsh, C.A. and Cohen, D.W. Evaluation of benzydamine HCl in patients with aphthous ulcers. *Comp Cont Educ* 2(1):14-16, 1981.
36. Matthews, R.W., Scully, C.M. and Levers, B.G.H. Clinical evaluation of benzydamine, chlorhexidine, and placebo mouthwashes in the management of recurrent aphthous stomatitis. *Oral Surg* 63(2):189-191, 1987.
37. Crossley, H.L. and Bergman, S.A. Nonsteroidal anti-inflammatory agents in relieving dental pain: an overview. *JADA* 106:61-64, 1983.
38. Landry, R.G., Turnbull, R.S. and Howley, T. Effectiveness of benzydamine HCL in the treatment of periodontal post-surgical patients. *Res Clin Forums* 10(8):105-117, 1988.
39. Adame Sosa, R. and Gomez Pedroso, A. Valoracion de bendidamina en el tratamiento de la inflamacion secundaria despues de la extraccion de terceros molares. *Pract Odontol* 11(7):29-31, 34, 1990.
40. Hunter, K. MacD. A clinical evaluation of benzydamine hydrochloride. *Aust Dent J* 23(2):164-166, 1978.
41. Asher, C. and Shaw, W.C. Benzydamine hydrochloride in the treatment of ulceration associated with recently placed fixed orthodontic appliances. *Eur J Orthod* 8:61-64, 1986.
42. Compendium of pharmaceuticals and specialties, Ed. 29, Canadian Pharmaceutical Association, Ottawa, 1994.

Just walking
to the
store....



PARTICIPATION

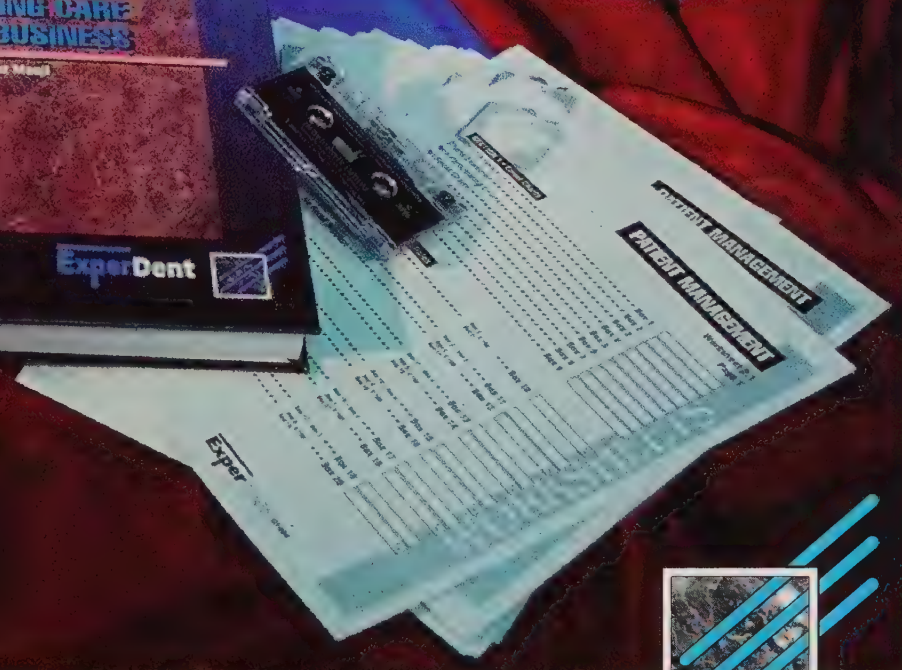
Moving Your Way - Every Day



The Canadian Dental Association Taking Care of Business



“Developed in partnership with CDA by ExperDent Consultants.”



See next page for more details...

Taking Care of Business is an essential resource for every dentist!

Over two years in development by the Canadian Dental Association in partnership with ExperDent Consultants, ***Taking Care of Business*** is the most extensive project in practice management that the CDA has ever undertaken. We went to the experts in Canadian dental practice management to bring you the most up-to-date and thorough practice management materials available anywhere in North America!

Volume 1 • Practice and Value Management

- Why practice value is important
 - Understanding your practice's potential
 - How to develop a financial plan
 - Examining your break even point
 - Patient management & recall strategies
 - Case management & treatment acceptance
 - Collections & payment control techniques
 - **260 pages plus worksheets and cassettes**
- Overview of major management systems
 - Overview of major career stages
 - Personal and practice budgeting
 - Setting realistic goals for practice growth
 - Marketing & growth strategies
 - Scheduling & appointing strategies
 - Introduction to practice transitions

Volume 2 • Associate and Transition Planning

- Key management areas for dentists
 - Why growth stops for most dentists
 - Transition choices for new dentists
 - Negotiating successful associateships
 - Designing and building a dental practice
 - Compensation plans for associates
 - Factors in sale/purchase transactions
 - **300 pages plus cassettes**
- The dental career cycle
 - Factors in retirement planning
 - Starting a new practice
 - Negotiating successful partnerships
 - Key factors in legal agreements
 - Practice valuation methods
 - Managing staff & patients during transitions

Volume 3 • Selecting a Dental Computer

- Preventing costly mistakes
 - Why computerizing is important
 - Review of the basics
 - How to evaluate the options
 - Understanding operating system environments
 - Evaluating support and maintenance
 - **150 pages plus worksheets**
- Uncovering hidden costs
 - How to choose a vendor
 - Learn about purchase contracts
 - Hardware & software needs
 - Installation and training
 - Getting comfortable with the language

Name: _____
Address: _____
Suite #: _____ City: _____
Prov: _____ Postal: _____
Telephone: (_____) _____
CDA Membership #: _____

☐ Cheque/money order enclosed.

☐ Visa ☐ MasterCard Expiry Date: _____

Credit Card #: _____
Signature: _____

Mail or fax order form and payment to: **Canadian Dental Association**,
Member Services, 1815 Alta Vista Drive, Ottawa, ON, K1G 3Y6
Order today! Call CDA toll-free 1-800-267-6354 or fax 1-613-523-7736.
Please allow 8 weeks for delivery.

Taking Care of Business • Volume 1
Practice & Value Management

Taking Care of Business • Volume 2
Associate & Transition Planning

Taking Care of Business • Volume 3

Subtotal

Shipping & Handling
\$5.50 per volume ordered

Subtotal

GST: 7% of subtotal (#R106845209)

PST: 8% of subtotal (Ontario only)

TOTAL \$

Member	Regular	Total
\$200	\$300	
\$150	\$250	
\$140	\$190	

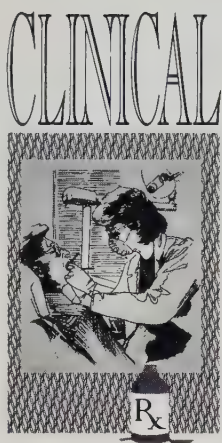
Shipping & Handling
 per volume ordered

Subtotal

al (#R106845209)

total (Ontario only)

TOTAL \$



Compression Implants: Case Report Of a Surgical, Prosthetic, and Cosmetic Failure

Con H. Jooste, B.Ch.D., M.Ch.D., PhD

South Africa

Chi-Chia Edward Tai, DDS

Robert Edgar Wood, DDS, M.Sc., Dip. Oral Radiol., FRCD(C)

Toronto

ABSTRACT

A case involving the use of non-submergible compression-type implants in an effort to rehabilitate a patient who had experienced tooth loss as a consequence of a motor vehicle accident is reported. The implants were placed in the maxillary arch without consideration of their contribution to subsequent prosthetic rehabilitation. The literature pertaining to compression-type implants is reviewed, and the difficulties related to their correct usage are delineated.

Key Words: Osseointegration, implants, prosthodontics

SOMMAIRE

Dans cet article, on présente le cas d'un patient qui a perdu des dents à la suite d'un accident de voiture et pour qui on a eu recours à des implants à compression non submersibles en les fixant dans l'arc maxillaire sans penser à leur contribution à la rééducation prothétique subséquente. Par ailleurs, on révisé la documentation touchant ce genre d'implants et on indique les difficultés liées à leur bon usage.

Introduction

The concept of osseointegration was first developed by Dr. P-I. Brånemark at the Institute for Applied Biotechnology, University of Göteborg, Sweden. While studying the microcirculation of bone repair, he discovered a strong, direct anchorage between the tibia of a rabbit and a titanium chamber.¹ Following numerous animal studies^{2,3} and a 10-year investigation of 1,618 consecutive titanium fixtures, placed in the edentulous jaws of 211 patients,⁴ the Brånemark osseointegration implant system (marketed by Nobelpharma) was deemed to be a suitable form of artificial tooth replacement.^{3,5}

Since then, numerous clinical studies of the Brånemark osseointegration system have been conducted with promising results. The success rates for titanium fixtures placed in 184 patients over a four-year period using this system were 96-98 per cent for the mandible and 92 per cent for the maxilla.⁶ Albrektsson et al⁷ conducted a study of 8,139 consecutively-inserted Nobelpharma implants, with a success rate of 99.1 per cent

and 84.9 per cent in the mandible and maxilla, respectively.

The design of an optimal dental implant system must successfully integrate various mechanical, chemical, physical, environmental, biological, and economic factors.⁸ Brånemark originally proposed these criteria for a well-designed dental implant system:³

- 1 A minimal amount of the patient's bone should be removed during the procedure, and the original topography of the jaw should remain unchanged;
- 2 During the healing stage, the original or newly fabricated transitional denture should be maintained; and
- 3 It should be reversible to conventional prosthetics.

Standards for Brånemark's implant design and surgical techniques were devised in 1979.⁹ The technique involved the use of a screw-shaped implant made of pure titanium, a two-stage atraumatic surgical procedure, and the controlled loading of the implant postoperatively.

Today, the "gold standard" technique for testing the presence of osseointegration is histological analysis. Since this is not applicable in a clinical setting, many in-

JOURNAL

February/
Février
1995
Vol. 61
No. 2

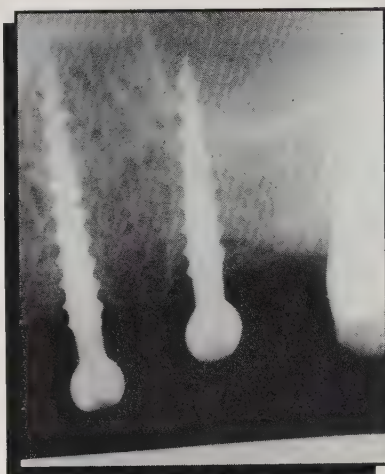


Fig. 1: Radiographic representation of the Le Comresse osseointegrated implant which was used in this patient.

investigators have resorted to radiographic imaging, computer-assisted density analysis, and percussion and mobility tests to evaluate clinical success.^{10,11}

In 1979, the National Institute of Health established a set of criteria for a successful dental implant procedure.¹² Albrektsson et al¹³ later proposed a new set of criteria for evaluating osseointegrated implants:

- 1 An individual, unattached implant should be immobile when tested clinically;
- 2 The radiograph of the implant should not demonstrate any evidence of peri-implant radiolucency;
- 3 The vertical bone loss should be less than 0.2 mm annually following the first year of service;
- 4 Individual implants should not exhibit infection, pain, paresthesia, neuropathy or mandibular nerve involvement; and
- 5 The minimal success rate of the implant system should be 80 per cent at the end of a 10-year observational period.

Smith and Zarb¹⁴ later added a sixth criteria: That an implant should not preclude the placement of a functional and esthetically-acceptable crown or prosthesis.

The use of compression implants in prosthetic rehabilitation was first described by Linkow and Chercheve¹⁵⁻¹⁷ and Ernst Bauer.¹⁷ Compression implants are non-submergible implants in which the infrastructure and attached supras-

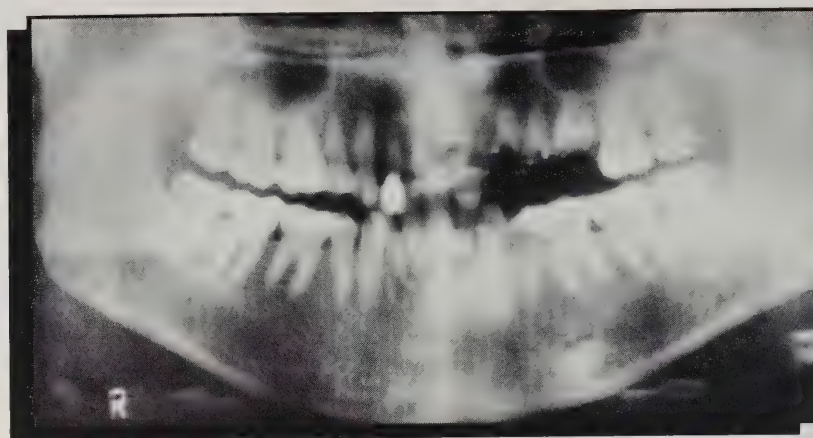


Fig. 2: Post-accident panoramic radiograph showing multiple fractured and avulsed maxillary teeth and partially avulsed lower incisors.

tructure are a single piece. Bütow et al¹⁸ described compression implants as self-tapping screws that compress bone and are therefore capable of accepting a load immediately. However, most of the compression implants placed by Bütow and his colleagues in this investigation were subjected to final loading after 15 weeks of rest.

The putative advantages of the compression-type implant are:

- 1 It allows the implant to be loaded immediately;
- 2 There is no need for a second surgical procedure to uncover the implant, which is normally allowed to heal beneath the mucosa;
- 3 It is cheaper;
- 4 It is a single unit, which eliminates any "play" between segments as in other implant systems;
- 5 The compression of the surrounding bone provides retention stability; and
- 6 It allows for a maximum osteogenic interface.

The designer and marketer of the compression-type implant system used in this study is "Le implant Comresse." According to Bütow et al,¹⁷ this implant system "achieves in the short term the same or even better results than the more well-known implants available."

These researchers claimed a failure rate of 3.3 per cent in the maxilla and 1.4 per cent in the mandible, or a total failure rate of

two per cent in 253 compression implants placed in 48 patients.

Factors such as material biocompatibility, implant design, implant surface, status of the bone bed, surgical technique, and loading conditions are important variables that may affect the prognosis of osseointegrated implants.¹⁰ The Le Comresse implant^{*} is manufactured and marketed in the Republic of South Africa. It is made of pure titanium in the form of a tapered screw (a radiographic representation is presented in **Fig. 1**), and is supplied in two lengths (13 mm and 18 mm).

This paper describes a case in which compression-type implants were used in an effort to rehabilitate a patient who had experienced tooth loss as a result of a motor vehicle accident. The results include a failure of proper placement, poor function and substandard esthetics. While it is not customary to report one's failures, the authors believe that consideration of cases such as this example, which involved poor implant selection, inadequate treatment planning, failure to coordinate implant placement with prosthetic care and inherent design defects in the compression implant, is as important as the reporting of successful cases.

Case Report

A 28-year-old man was involved in a motor vehicle accident in which he sustained multiple avulsed maxillary teeth and luxation of most of the lower anterior

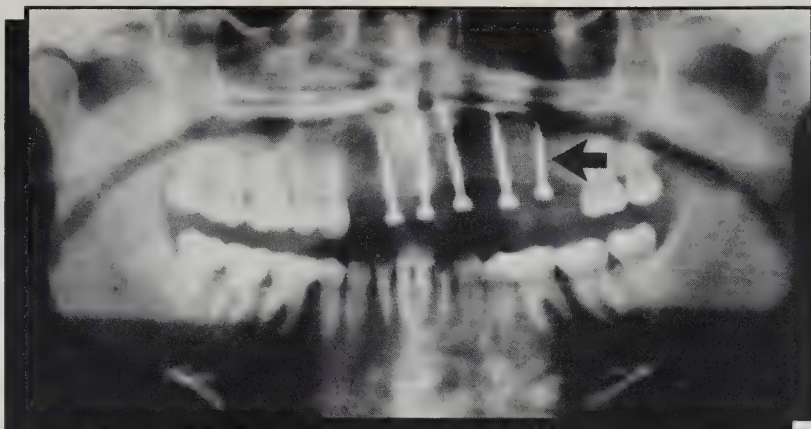


Fig. 3a: Panoramic radiograph following placement of implant fixtures. Note the placement of the posterior implant into the maxillary sinus (arrow) and placement of two of the anterior implants through the bony portion of the nasal fossae, as pictured on the anterior occlusal radiograph in Fig. 3b.

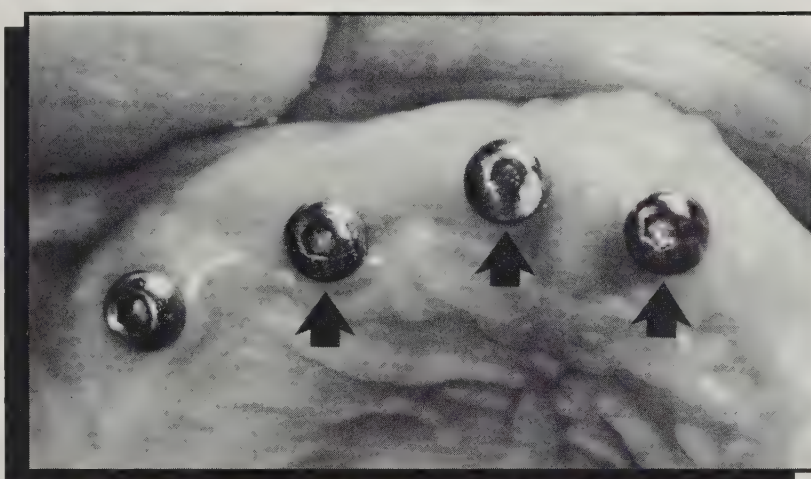


Fig. 4: Clinical photograph of implants showing necessary reduction to remove implants from traumatic occlusion with lower teeth (arrows). Note lack of superstructure remaining for prosthesis.

teeth (**Fig. 2**). Specifically, he lost teeth 11, 12, 22, 23, 24, 25 and 26. The lower teeth were splinted and immobilized, and the front four lower incisors were treated endodontically within two weeks of the accident. A temporary, removable, acrylic partial denture was placed one month following the accident for esthetic reasons.

Six months after the accident, five Le Comprese 2 implants were placed in the edentulous area of the maxilla in the region formerly occupied by the avulsed teeth. The 18 mm implant size was selected for use in the anterior region, while one 13 mm implant was placed in the region overlying the left maxillary sinus (**Fig. 3a**). The existing temporary maxillary partial denture was modified to fit over the implant superstructure. Following the surgical placement

of the implants, radiographic evaluation revealed that the apical portion of the distal implant was within the maxillary sinus. Several of the anterior implants encroached on the nasal floor (**Fig. 3b**).

Eight months after implant placement, a plastic partial denture incorporating four implant abutments was placed. Plastic retentive clips were used to engage the implant abutment portion. At this stage, two of the implant superstructures had to be mechanically reduced as they were in traumatic occlusion with the lower teeth (**Fig. 4**).

Eighteen months following implant placement, the implant placed in the maxillary sinus was surgically removed because of mobility and symptoms of infection. The patient was left with a



Fig. 3b: Placement of two of the anterior implants through the bony portion of the nasal fossae.

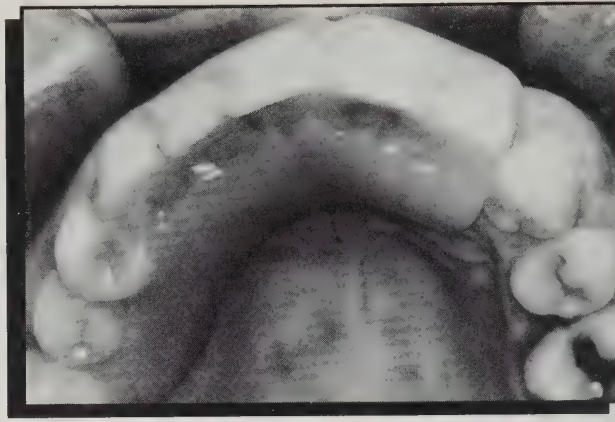
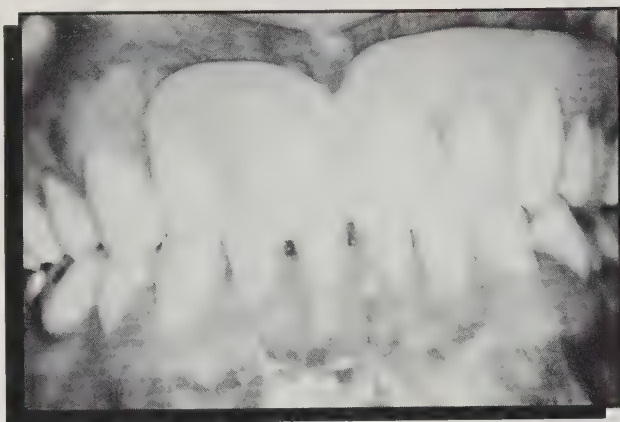
removable partial acrylic denture that did not cover the palate, and was both functionally and esthetically sub-optimal (**Figs. 5a and 5b**).

Discussion

Whereas other implant systems offer a variety of lengths to fit specific situations, the Le Comprese system, with lengths of 13 and 18 mm, may be inappropriate for many clinical applications.^{9,19} This proved true in the present case, where even the shorter implant was placed within the confines of the maxillary sinus. The original standard Brånemark implant fixture had a length of 10 mm.⁹ This is significantly shorter than the 18 mm implants used in the present case.

The length of prospective implants is critical in the maxilla because of the proximity to the paranasal sinuses and the floor of the nose, and the general lack of basal bone. Implant length is also critical when placing implants posterior to the mental foramen of the mandible, because of the presence of the inferior alveolar nerve.

The compression that occurs in placing the implant (when done according to manufacturer's instructions) crushes the bone tissue and most likely results in bony necrosis. The originators of the system argue that compression and, therefore, crushing of the bone is a plus in that it provides a tight fit.²⁰ However, other studies have argued that the placement of the fix-



Figs. 5a and b: Clinical photograph of cosmetically and functionally deficient final appliance in place. This represented the best fit obtainable.

ture and the quality of the surgical technique used must, of necessity, adhere to the principle of avoiding bone destruction in implant placement.

When bone tissue is crushed, it seems unlikely that the implant site will be a good milieu for promoting osseous ingrowth into the implant itself. Despite this, four of the five Le Comresse 2 implants placed in this study did osseointegrate.

A three-year clinical trial of 1,155 compression screw implants conducted by Bütow and Potgieter²⁰ demonstrated a failure rate of 3.81 per cent, where the majority of the implant failures occurred during the pre-loading phase.

By applying the criteria described by Smith and Zarb,¹⁴ the authors were able to make the following conclusions about the Le Comresse dental implant system used in this study. Four of the five compression implants were judged clinically immobile. Radiographically, four of the five implants showed no sign of any peri-implant radiolucency. No clinical information was available to determine the amount of vertical bone loss following one year of service. Only one implant exhibited signs and symptoms of infection. Therefore, four of the five implants in this case may be considered to have undergone osseointegration.

Although these implants may undergo osseointegration, they must be placed so that final appliances are rigidly fixed, and they must allow for the fabrication of a

properly-designed prosthetic denture with adequate occlusion. They must also address the esthetic expectations of the patient. Unfortunately, in this case, these issues were not addressed properly, and this ultimately led to a prosthetic and cosmetic failure.

The purpose of the waiting period in two-stage implant systems such as the Brånemark and the Core-vent systems is to allow complete bony remodelling and integration prior to the loading of these structures. Therefore, it seemed unusual that only one of the five compression implants used in this study failed to osseointegrate following placement with a one-stage surgical implantation procedure. This failure was mainly attributed to the placement of the compression implant into the maxillary sinus.

The mandatory preloading phase of four to six months required in this single-stage compression implant system²⁰ is similar to other systems such as Brånemark.²² The resting period required to ensure adequate osseointegration of the Le Comresse 2 implant system seemed to contradict the advantage of it being able to accept immediate loading, as cited previously.¹⁷ How this implant system maintains an atraumatic preloading phase is questionable if it is left protruding into the oral cavity. Even if the transitional denture is made so that it is well relieved, this implant system does not allow for a protective tissue layer lining to prevent accidental trauma by the transitional denture.

The choice of implant suprastructure with these implants is highly limited. Since they are in one piece, it is impossible to modify the portion of the implant to which the denture component attaches in a non-destructive way. This represents a serious limitation. It is also virtually impossible to tie the implants together to form bars to which prostheses can be attached.

While it is recognized that any implant can be improperly placed, the use of this self-tapping screw system does not allow the surgeon an opportunity to visualize the entire cavity into which the implant is being placed. Furthermore, a greater variety of implant lengths is required to accommodate anatomical criteria. These are serious problems, in that they may result in a greater risk of anatomically inappropriate implant placement and iatrogenic chronic sinus or nerve damage.

The final prosthetic result illustrates the importance of proper treatment planning with an eye to eventual prosthetic rehabilitation. Osseointegration in itself is not the sole successful endpoint. Proper selection of the patient, surgical implantation site, and prosthodontic appliance, pre- and post-diagnostic imaging, and patient education are all important factors that determine the outcome of the dental implant procedure. ■

**Le Comresse / Southern Implants
CDSA (Pty) Irene 1675 R.S.A.*

Acknowledgements: The authors wish to express their appreciation to Mr. Marius Jooste for assistance in preparation of the photographs and to Ms. S. Roberts for typing of the manuscript and John Jackson for library assistance.

Dr. Jooste is a staff member, department of prosthetic dentistry, faculty of dentistry, University of Stellenbosch, Tygerger 7505, S. Africa.

Drs. Tai and Wood are staff members of the department of dentistry, Ontario Cancer Institute, Princess Margaret Hospital, Toronto.

Reprint requests to: Dr. Robert E. Wood, Ontario Cancer Institute/Princess Margaret Hospital, 500 Sherbourne St., Toronto, ON M4X 1K9

References

1. Brånemark, P-I., Breine, U., Johanson, B et al. Regeneration of bone marrow. *Acta Anat* 59:1-46, 1964.
2. Brånemark, P-I., Breine, U., Adell, R. et al. Intraosseous anchorage of dental prostheses. I. Experimental studies. *Scand J Plast Reconstr Surg* 3:81-93, 1969.
3. Brånemark, P-I. Osseointegration and its experimental background. *J Prosthet Dent* 50:399-410, 1983.
4. Brånemark, P-I., Hansson, B-Q., Adell, R. et al. Osseointegrated implants in the treatment of the edentulous jaw. *Scand J Plast Reconstr Surg* 11(suppl 16):1-132, 1977.

5. Zarb, G. Introduction to osseointegration in clinical dentistry. *J Prosthet Dent* 49:824, 1983.
6. van Steenberghe, D., Quirynen, M., Calberson, L. et al. A prospective evaluation of the fate of 697 consecutive intraoral fixtures modum Brånemark in the rehabilitation of edentulism. *J Head Neck Pathol* 6:53-58, 1987.
7. Albrektsson, T., Dahl, E., Enbom, L. et al. Osseointegrated oral implants: a Swedish multi-centre study of 8,139 consecutively inserted Nobelpharma Implants. *J Periodont* 59:287-296, 1988.
8. Kohn, D. Overview of factors important in implant design. *J Oral Implant* 18:204-219, 1992.
9. Lekholm, U. The Brånemark implant technique: a standardized procedure under continuous development. In: Laney, W., Tolman, D., eds. *Second International Congress on Tissue Integration in Oral, Orthopedic, and Maxillo-facial Reconstruction*. Minnesota, Quintessence Books, 1990, pp. 194-199.
10. Albrektsson, T. and Albrektsson, B. Osseointegration of bone implants: a review of an alternative mode of fixation. *Acta Orthop Scand* 58:567-577, 1987.
11. Van Scotter, D. and Wilson, C. The Periotest method for determining implant success. *J Oral Implant* 17:410-413, 1991.
12. Schnitman, P. and Shulman, L. Recommendation of the consensus development conference on dental implants. *JADA* 98:373-377, 1979.
13. Albrektsson, T., Zarb, G., Worthington, P. et al. The long-term efficacy of currently-used dental implants.

A review and proposed criteria for success. *Int J Oral Maxillofac Imp* 1:11-25, 1986.

14. Smith, D. and Zarb, G. Criteria for success of osseointegrated endosseous implants. *J Prosthet Dent* 62:567-572, 1989.
15. Linkow, L. and Chercheve, R. *Theories and techniques of oral implantology, vol I*. Saint Louis, The C.V. Mosby Company, 1970, pp. 167-168.
16. Linkow, L. and Dorfman, J. Implantology in dentistry: a brief historical perspective. *NY State Dent J* 57:31-35, 1991.
17. Butow, K., Potgieter, P. and Blackbeard, G. Osseointegrated compression implantation: The surgical versatility. *J Dent Res* 71:1112 (88), 1992.
18. Butow, K., Potgieter, P. and Burkel, H. Osseointegrated compression screw implants. *Hands On* 3:11-14, 1991.
19. Hobo, S., Ichida, E. and Garcia, L. *Osseointegration and Occlusal Rehabilitation: Osseointegration Implant Systems*. Chicago, Quintessence Publishing Company, 1989, pp. 21-32.
20. Butow, K. and Potgieter, P. The success rate of the first 1,000 osseointegrated compression screw implants. *Hands On* 5:35-36, 1993.
21. Boyne, P. Bone response to dental endosseous implants. In: Babbush, C., ed., *Dental Implants: principles and practice*. Toronto, W.B. Saunders Company, 1991, pp. 23-24.
22. Adell, R., Lekholm, U., Rockler, B. et al. A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. *Int J Oral Surg* 6:387, 1981.

In Communiqué This Month . . .

- Finance Committee Releases Pre-Budget Consultation Report
- CDA, BDA, ADA Respond to BBC's Amalgam Story
- CDA Holds Annual Planning Session
- CFDS and Surgeon General Cut Costs By Merging Support Staff

Special Features

- Profile: Mr. Michel Hart - A Friend of Dentistry
- Personal Finances: RRSP Decisions A Tough Choice in 1995
- Viewpoint: BBC's Poison in the Mouth Program Sends the Wrong Message

... And More

Look for these stories and more in the January issue of Communiqué. CDA members receive Communiqué six times per year in the language of their choice as a benefit of membership in CDA. For more information, or to join your national association, call 1-800-267-6354.

Membership is your Voice

**CDA is the national voice of dentistry.
Take advantage of the many professional and
personal benefits of membership and help shape
the future of Canadian dentistry.**



**CANADIAN
DENTAL
ASSOCIATION**

CLINICAL



The Effect Of Storage Temperature On the Resistance To Failure Of Dental Local Anesthetic Cartridges

J.G. Meechan, BDS, PhD

Newcastle upon Tyne, England

D. Donaldson, BDS, FDS, RCS, MDS

A. Kotlicki, PhD, D.Sc.

Vancouver

ABSTRACT

This *in vitro* investigation studied the effect of storing dental local anesthetic cartridges at room temperature and at 37°C on the forces required for cartridge failure under strong injection pressures. Storage for three hours at the higher temperature resulted in a significant reduction in the forces required to produce failure of plastic cartridges (leakage of solution around the bung). The forces needed to cause failure of glass cartridges did not differ between the two temperatures.

SOMMAIRE

Dans cette expérience *in vitro* sur les cartouches d'anesthésique dentaire local, on a étudié l'effet de leur entreposage à la température ambiante et à 37°C sur les forces nécessaires pour qu'elles fassent défaut sous de fortes poussées d'injection. Après un entreposage de trois heures à la température la plus haute, on a noté que les forces nécessaires pour que les cartouches en plastique fassent défaut (fuite de la solution autour de la bonde) étaient considérablement réduites. Par contre, les forces nécessaires pour entraîner un

défaut dans les cartouches en verre n'étaient pas différentes d'une température à l'autre.

Introduction

The methods used to store glass local anesthetic cartridges have been shown to affect some of their physical properties, such as the force required to begin and maintain injection at a given rate of delivery of solution, and the flexibility of the rubber bung and basal diaphragm within the cartridge.¹ The introduction of specialized intraligamentary syringes, which allow the application of strong pressure to dental local anesthetic cartridges, means that

cartridges are now subjected to greater forces than may readily be achieved with conventional syringe systems. Indeed, the fracture of cartridges during intraligamentary injections has been reported by a number of operators.²⁻⁴

This investigation was designed to determine the effect of temperature on the forces required to produce failure of glass and plastic dental local anesthetic cartridges under strong injection forces *in vitro*.

Materials and Methods

Sixty glass and 60 plastic dental local anesthetic cartridges containing two per cent lidocaine with 1:100,000 adrenaline (Astra Phar-

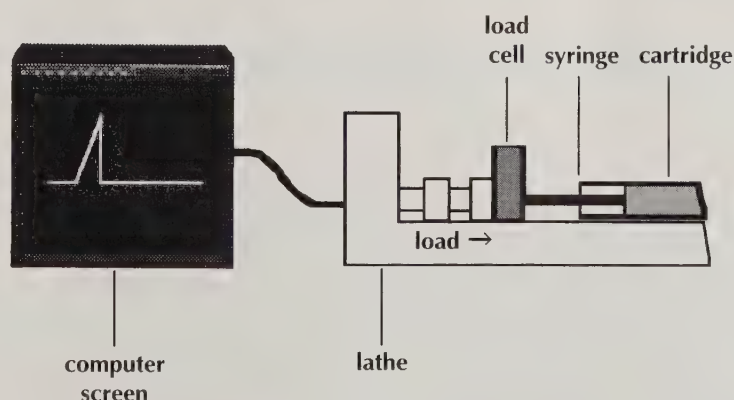


Fig. 1: A diagrammatic representation of the test rig.

JOURNAL

February/
Février
1995
Vol. 61
No. 2

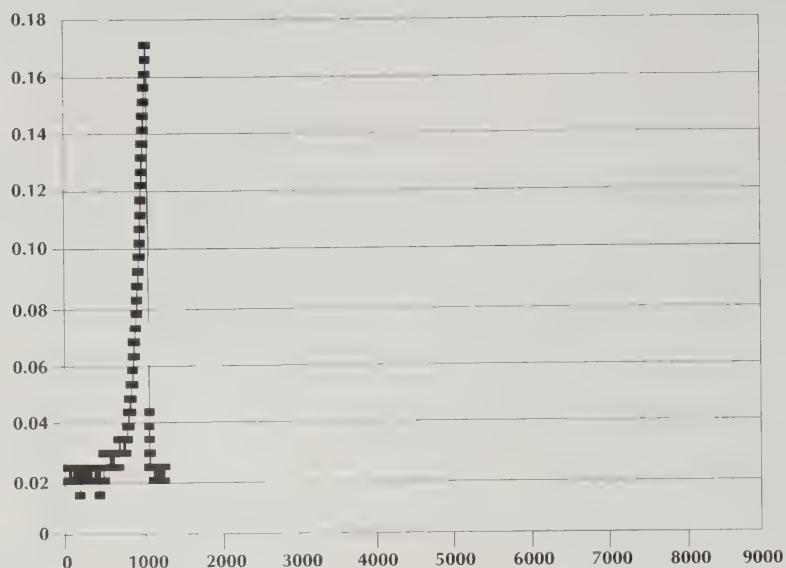


Fig. 2: An example of a trace obtained during testing of a glass cartridge to destruction. The x axis represents time in 1/1,000 sec and the y axis the applied load ($\text{kg} \times 10^2$).

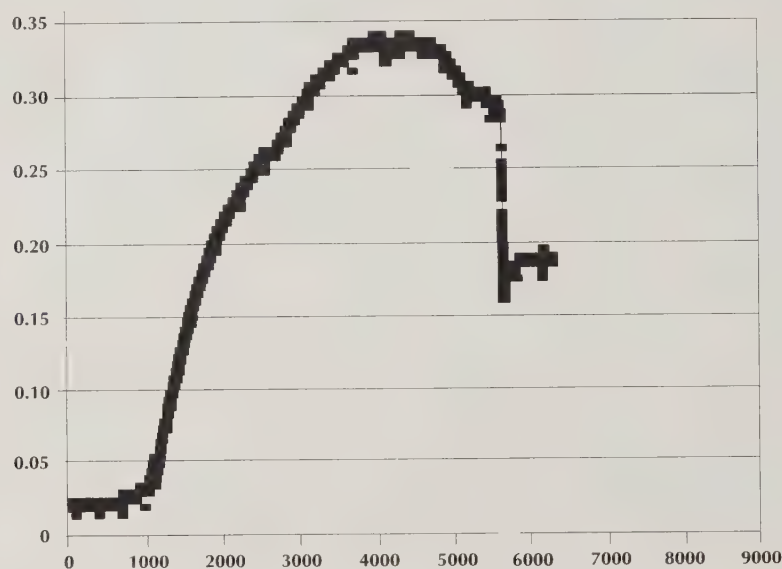


Fig. 3: An example of a trace obtained during testing of a plastic cartridge to destruction. The x axis represents time in 1/1,000 sec and the y axis the applied load

maceuticals, Mississauga) were tested to destruction. All cartridges were within their shelf life at the time of the test and only one batch of each type (glass or plastic) was used. Thirty cartridges of each type were stored for three hours at 37°C before the test, while the remainder were stored at room temperature (22°C). The cartridges were loaded into a standard dental syringe, but no needle was attached. Each loaded syringe was placed in a Colchester Lathe (Colchester Lathe Company, England) that was set to depress the syringe plunger at a rate of 2.5 cm per minute. A load cell attached to the plunger was connected to a microcomputer that graphically displayed the force being applied to the plunger (Figs. 1, 2 and 3). The force required for failure (the maximum force recorded) was noted for each cartridge. These forces were subsequently compared by t testing and by Weibull analysis.

Results

Results are shown in **Tables I and II** and **Figs. 4 and 5**. They are presented both in relation to the load applied in kilograms and to the resultant pressure (in megapascals) that developed within the cartridge, which was calculated by dividing the applied load by the area of the cartridge's rubber bung.

In this investigation, plastic cartridges were found to be more resistant to failure under stress than glass cartridges. When stored at room temperature, the force needed to fracture glass cartridges was significantly less than that required to cause failure of the plas-

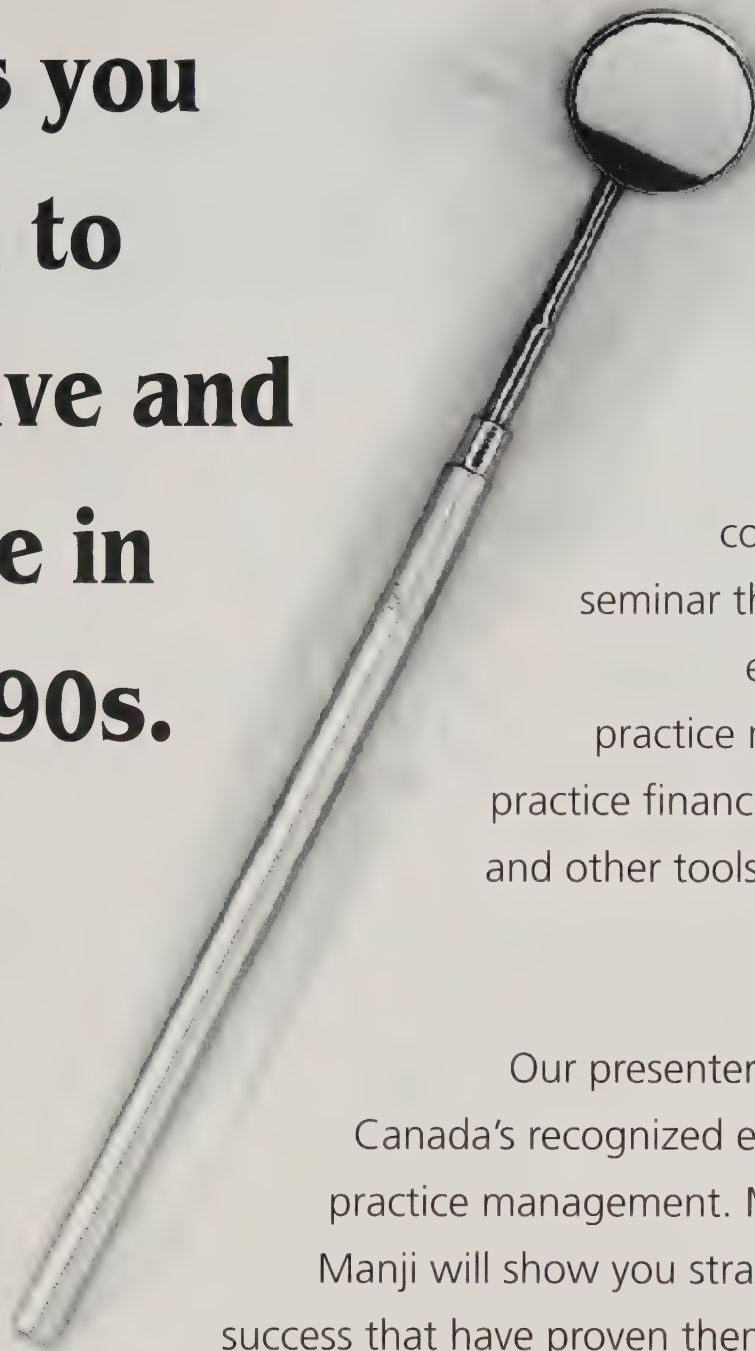
Table I

Mean Loads and Pressures For Failure Of Glass and Plastic Dental Local Anesthetic Cartridges

Cartridge	Temp. (°C)	Mean load (kg) [pressure MPa] for failure	s.d. kg [MPa]	Range kg [MPa]
Plastic	22	29.96 [8.6]	3.07 [0.89]	23.44-35.16 [6.7-10.1]
Plastic	37	23.24 [6.7]	2.40 [0.69]	16.60-27.83 [4.8- 8.0]
Glass	22	20.21 [5.8]	4.22 [1.20]	14.60-33.69 [4.1- 8.8]
Glass	37	20.10 [5.8]	3.66 [1.10]	16.11-30.76 [4.6- 8.8]

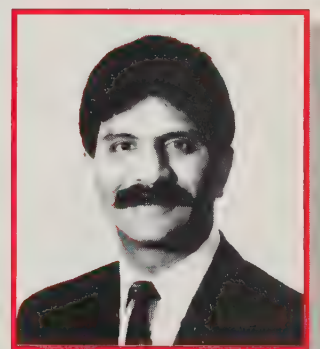
One of the tools you need to survive and thrive in the '90s.

CANADIAN
DENTAL
ASSOCIATION



But there are others and we'd like to tell you about them. You are cordially invited to a one day seminar that's packed with practical, effective tips and advice on practice management, patient care, practice financial planning, team building and other tools you need to survive – and thrive – in the '90s.

Our presenter is one of Canada's recognized experts on practice management. Mr. Imtiaz Manji will show you strategies for success that have proven themselves in hundreds of practices from coast to coast.



Windsor
January 13, 1995

Winnipeg
May 5, 1995

Halifax
February 10, 1995

Hamilton
March 3, 1995

London
June 23, 1995

Saskatoon
May 12, 1995

See next page for more details...

The Canadian Dental Association

One Day Seminar • Limited Enrolment • CE Credits Pending*

Surviving and Thriving in the '90s

Re-engineering your practice and life plan for success!

Strategies for Patient Care

- ✓ Discover how successful practices achieve 90% retention in hygiene.
- ✓ Determine how many hygiene days your practice really needs to meet patient care needs.
- ✓ Turn your patients into in-house marketers. Learn 9 times you can ask for a referral comfortably.
- ✓ Learn how to identify your patients' motivations and sidestep reasons to avoid treatment.
- ✓ Find out what patients want to know to accept ideal treatment & maintain optimum oral health.
- Minimize Downtime

Strategies for Transition Management

- ✓ Discover when and how to integrate an associate into your growing practice.
- ✓ Find out why "equity" associateships are so successful.
- ✓ Untangle practice stagnation and overcome saturation through transition options.
- ✓ Learn how to plan your calendar for the re-engineered practice.
- Maximize Practice Value

Strategies for Practice Financial Planning

- ✓ Learn to control practice expenses.
- ✓ Discover how to anticipate your cashflow and eliminate shortfalls.
- ✓ Find out the vital signs of financially healthy practices.
- ✓ Learn to play "what if's" before making important decisions.
- Eliminate Financial Stress

Strategies for Team Leadership

- ✓ Learn the 6 key factors in practice management that your team must understand.
- ✓ Adjust your team's job roles to increase productivity and maximize patient care.
- ✓ Discover how to set precise and realistic goals for team performance, accountability and incentives.
- ✓ Find out how team meetings and communication are essential in the successful practice.
- ✓ Learn 20 common mistakes dentists make which decrease team performance & increase overhead.
- Build a Highly-Motivated Team

Agenda 8:30: Sign-in • 9:00: Begin • 12:15: Break (lunch included) • 1:15: Resume • 4:00: Close

Pre-registration is required. There will be no on-site registrations. Register early since enrolment is limited.

OFFICE MANAGER/SPOUSE attending with dentist \$80

DENTIST \$160

SUBTOTAL

GST 7% of subtotal (#R106845209)

TOTAL

Number	Total
	\$
	\$
	\$
	\$
	\$

Name: _____ CDA Membership #: _____

Street: _____ City/Province: _____

Postal Code: _____ Telephone (Office): _____ Seminar Location: _____

A receipt for the above registration fees will be issued to: _____

☐ Cheque made payable to the Canadian Dental Association enclosed. (No post-dated cheques)

☐ Visa

☐ MasterCard

Signature: _____ Credit Card #: _____ Expiry Date: _____

Mail or fax registration form and payment to:

Canadian Dental Association, Member Services, 1815 Alta Vista Drive, Ottawa, ON, K1G 3Y6

Register today! Call CDA toll-free 1-800-267-6354 or fax 1-613-523-7736.

Confirmation of your enrolment will be received by mail. Cancellation policy: Full refund 21 days prior to seminar.

*CE Credits will apply subject to Provincial approvals pending.

CDA member dentists
receive a \$75 credit towards
the purchase of
Taking Care of Business
Volumes 1, 2 & 3

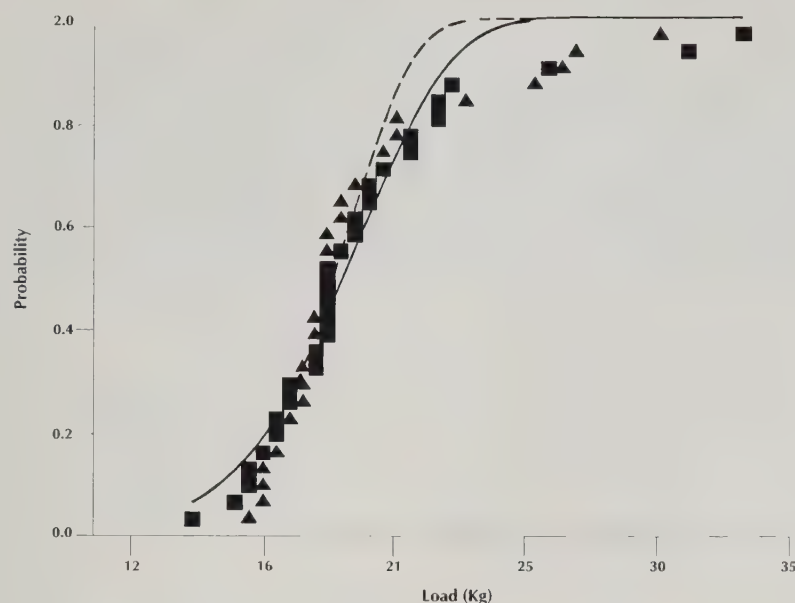


Fig. 4: A Weibull plot of applied load versus the probability of failure for glass cartridges at 22°C (squares) and 37°C (triangles).

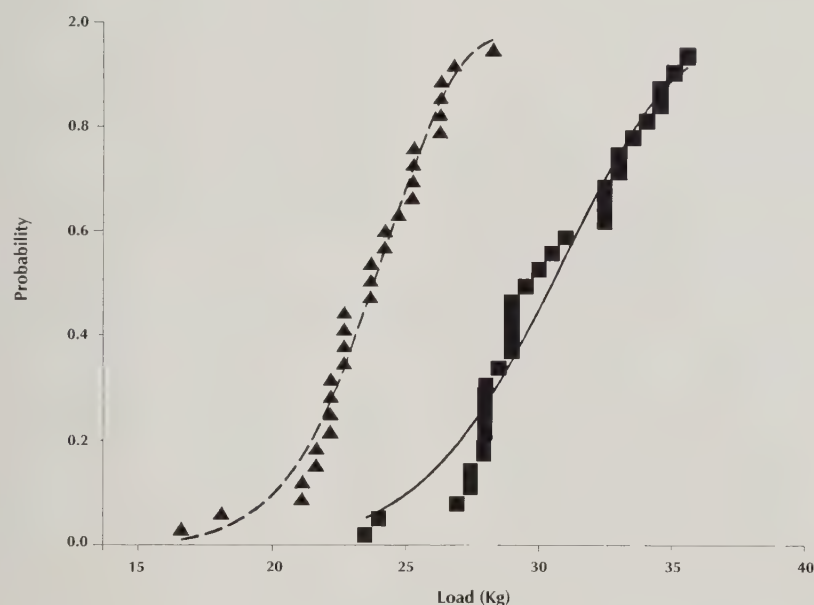


Fig. 5: A Weibull plot of applied load versus the probability of failure for plastic cartridges at 22°C (squares) and 37°C (triangles).

tic cartridges ($t = 10.23$, 58 degrees of freedom, $p < 0.001$).

Storage at 37°C significantly reduced the force required to produce failure in the plastic cartridges ($t = 9.43$, 58 degrees of freedom, $p < 0.001$). However, the force required for failure in the glass cartridges did not differ be-

tween the two storage temperatures ($t = 0.11$, 58 degrees of freedom, $p > 0.1$) (Table I).

Three glass cartridges at each temperature did not fracture, but failed in the same manner as the plastic cartridges, i.e. the bung distorted and solution was forced out of the bung end of the cartridge.

Both glass and plastic cartridges had high Weibull moduli at both 37°C and room temperature (Table II).

Discussion

The results of the present investigation show that the loads required to produce failure of plastic dental local anesthetic cartridges are affected by the temperature of storage. There was a significant reduction in the load needed to produce failure at the higher temperature. No such difference was found with the glass cartridges used in the present investigation. However, the forces required to produce failure of the plastic cartridges were greater than those for glass.

None of the plastic cartridges investigated in the present study fractured. Failure was due to distortion of the wall around the bung, with leakage of solution around the bung. Physical damage to the patient and operator is unlikely to occur in these instances. However, such failure may not be obvious clinically if the design of the high-pressure intraligamental syringe used with the cartridge does not incorporate a viewing port. In this respect, plastic cartridges may offer a disadvantage. On the other hand, most of the glass cartridges (54 out of 60) failed by fracturing. Clearly, the production of glass splinters poses a greater risk to the patient and operator alike than leakage of anesthetic around the bung, unless glass cartridges are used with some form of protective sleeve. When failure of a glass cartridge occurs it is usually obvious.

The rationale for the use of Weibull analysis in determining failure of materials has been fully described by McCabe and Carrick.⁵ The number of cartridges used in this investigation was sufficient to allow accurate Weibull analysis of the results,⁶ and thus the probability of failure under given loads could be assessed.

In an *in vitro* study by Maita and Horiuchi,⁷ the maximum injection pressures generated by male operators using conventional syringes fitted with 30-gauge needles

Table II

Weibull Analysis

Cartridge	Temp. (°C)	Weibull Modulus	Characteristic Strength (kg)
Plastic	22	9.2	31.3
Plastic	37	11.0	24.2
Glass	22	7.2	20.6
Glass	37	9.5	20.0

was reported to be 87.9 kg/cm² (8.6 MPa). This would have resulted in the failure of over 99 per cent of the glass cartridges used in the present investigation, at both temperatures. At room temperature, 50 per cent of the plastic cartridges would have survived this pressure, whereas more than 99 per cent would have failed at 37°C.

Walmsley et al⁸ reported that the greatest pressure measured during intraligamentary injections with specialized syringes *in vitro* was 5.2 MPa. Such a pressure would have produced failure in 40 per cent of the glass cartridges used in the present study, compared to approximately three per cent of the plastic cartridges at 37°C and less than one per cent at room temperature.

Both types of cartridge had high Weibull Moduli, which denotes good dependability (the higher the modulus the more reliable the material).

There are a number of arguments against storing dental local anesthetic cartridges at 37°C. Adrenaline is more rapidly oxidized at this temperature, compared to

room temperature, resulting in a subsequent loss of activity. In addition, the risk of bacterial contamination is increased and the pH of the solution falls, which might increase injection discomfort. The supposed advantage of reducing injection sensation by using a solution at 37°C is not supported by the evidence of a number of studies.⁹⁻¹⁰ The results of the present investigation reveal another disadvantage of storing anesthetic at the higher temperature, at least as far as plastic cartridges are concerned. ■

Dr. Meechan is a lecturer in oral surgery, department of oral surgery, University of Newcastle upon Tyne, England.

Dr. Donaldson is head, department of oral medical and surgical sciences, University of British Columbia, Vancouver, B.C.

Dr. Kotlicki is professor, department of physics, University of British Columbia.

Reprint requests to: Dr. J.G. Meechan, Department of Oral Surgery, The Dental School, Framlington Place, Newcastle upon Tyne, England NE2 4BW.

References

1. Meechan, J.G. and McCabe, J.F. Effect of different storage methods on the performance of dental local anesthetic cartridges. *J Dent* 20:38-43, 1992.
2. Malamed, S.F. The periodontal ligament (pdl) injection: an alternative to inferior alveolar nerve block. *Oral Surg* 53:117-121, 1982.
3. Miller, A.G. A clinical evaluation of the Ligmaject periodontal ligament injection syringe. *Dent Update*, November/December: 639-643, 1983.
4. Meechan, J.G. and McCabe, J.F. A model for investigating the probability of fracture of dental local anesthetic cartridges. *Br Dent J* 160:326-328, 1986.
5. McCabe, J.F. and Carrick, T.E. A statistical approach to the testing of dental materials. *Dent Mater* 2:139-142, 1986.
6. McCabe, J.F. and Walls, A.W.G. The treatment of results for tensile bond strength testing. *J Dent* 14:165-168, 1986.
7. Maita, E. and Horiuchi, H. Measurements of pressures developed in the syringe during dental infiltration anesthesia. *Br Dent J* 156:399-400, 1984.
8. Walmsley, A.D., Lloyd, J.M. and Harrington, E. Pressures produced *in vitro* during intraligamentary anesthesia. *Br Dent J* 167:341-344, 1989.
9. Oikarinen, V.J., Ylipaavalnemi, P. and Evers H. Pain and temperature sensations related to local analgesia. *Int J Oral Surg* 4:151-156, 1975.
10. Root, J.P. The temperature of local anesthetic solutions. *J Dent* 5:213-214, 1977.

5,491,989

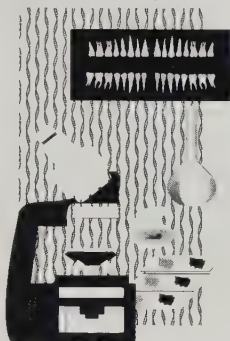


THAT'S
HOW MANY
CANADIANS
ARE CROSS-
COUNTRY
SKIERS

Way to go, Canada!



RESEARCH



A Survey Of Dentists and the Services They Provide To Disabled People In the Province of Manitoba

Alan R. Milnes, DDS, D. Ped., PhD, FRCD(C)

Toronto

Robert Tate, B.Sc., M.Sc.

Eileen Perillo

Winnipeg, Manitoba

ABSTRACT

Persons with disabilities occasionally report that dentists are reluctant to provide them with either dental care or necessary services. There is very little information about the kinds of services that Canadian dentists provide to disabled people. To answer this question, a mail survey, following Dillman's Total Design Method, was undertaken in Manitoba. Questionnaires were mailed to all dentists licensed to practise in Manitoba in 1990. A total of 342 surveys were returned, representing a 62 per cent response rate. In all, 259 (76 per cent) of respondents reported regularly providing dental care to disabled people of all ages who were afflicted by a broad range of disabling conditions. The private dental office was the primary location in which this dental care was provided, but 65 dentists (25 per cent) reported providing dental care in hospitals or other institutions such as nursing homes. Forty per cent of the dentists who reported treating disabled people were willing to accept referrals of new patients with disabilities. Dentists reported providing a full range of dental services to disabled people, and using similar modes of pain control for both disabled and non-disabled patients. The primary mechanism

of payment was social assistance programs. Dentists reported that they received adequate compensation (defined as their usual and customary fee) in only 50 per cent of the cases in which they provided dental care to disabled patients. However, 27 per cent of the respondents reported always receiving their customary fee, and 52 per cent indicated that they would be willing to attend continuing education courses offered in the area of special patient care. The investigation has shown that Manitoba dentists are willing to provide a full range of dental services to disabled people and that they are interested in improving both their own knowledge in special patient care as well as access to care for Manitoba citizens who live with disabilities.

SOMMAIRE

Des handicapés se plaignent parfois que les dentistes répugnent à leur offrir des soins dentaires ou des services qui leur sont nécessaires. Comme on a très peu de données à ce sujet, on a effectué au Manitoba un sondage par courrier suivant la méthode Total Design de Dillman. On a donc posté un questionnaire à tous les dentistes autorisés, en 1990, à exercer dans la province et, en tout, 342 y ont

répondu, soit 62 p. cent. Sur ce nombre, 259 (76 p. cent) ont déclaré qu'ils offrent régulièrement des soins dentaires à des handicapés de tout âge affligés de toutes sortes de handicaps. Le cabinet privé est le principal endroit où ces soins sont offerts, mais 65 dentistes (25 p. cent) en offrent aussi dans des hôpitaux ou des institutions comme les maisons de santé. Parmi les dentistes qui traitent des handicapés, 40 p. cent se sont dits d'accord pour qu'on leur adresse de nouveaux patients avec des handicaps. Quant aux services offerts, les dentistes en offrent toute la gamme aux handicapés, utilisant les mêmes moyens pour réduire la douleur tant pour ceux-ci que pour les autres patients. Les paiements se font surtout par l'intermédiaire des programmes d'aide sociale, mais c'est seulement dans 50 p. cent des cas où ils traitent des handicapés que les dentistes reçoivent une rémunération convenable (les honoraires habituels ou coutumiers), alors que 27 p. cent touchent toujours les honoraires habituels. Enfin, 52 p. cent des sondés seraient disposés à suivre des cours de formation continue pour mieux traiter les patients spéciaux. Bref, ce sondage révèle que les dentistes du Manitoba sont disposés à offrir toute la gamme des services dentaires aux handicapés

JOURNAL

February/
Février
1995
Vol. 61
No. 2

et qu'ils sont intéressés aussi bien à en apprendre davantage dans ce domaine qu'à améliorer l'accès aux soins pour les handicapés de la province.

Introduction

Persons with disabilities often have difficulty obtaining dental care^{1,2} and, as a result, may experience more severe dental disease. Several reasons have been suggested to account for this. The most frequently stated are:

- 1 The dental profession's lack of experience in treating people with handicaps^{3,4};
- 2 Inadequate information on the dental needs of handicapped people^{1,5,6};
- 3 Unfavourable attitudes toward disabled people within the dental community⁷⁻¹¹;
- 4 Financial barriers to treatment¹²; and
- 5 Apathy among caregivers because of greater concern with the handicap.^{2,13,14}

Throughout this paper, the terms disabled, handicapped, and person(s) with disabilities have been used to describe individuals with a mental, physical or medical condition (or any combination of the three) that substantially limits one or more major activity such as self care, performance of manual tasks, walking, seeing, hearing, speaking, breathing, learning and working.²³

Since disabled individuals are living longer, dentists will need to be better educated and trained to properly manage their future oral health needs.^{2,8,9} However, the issue of providing dental care to the disabled involves more than dentists. The disabled and handicapped are often dependent on others in the community for access to many services, including dental services.^{2,14}

A consensus exists on the substantial amount of difficulty that disabled individuals experience in obtaining comprehensive and regular dental care.^{2,5,16} This has

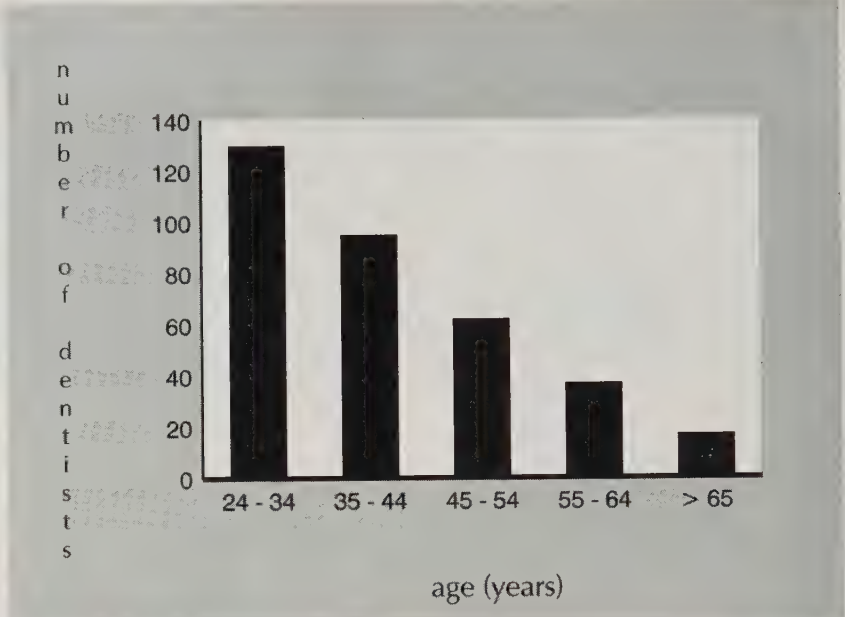


Fig. 1: Number of dentists responding to survey. Age group categories.

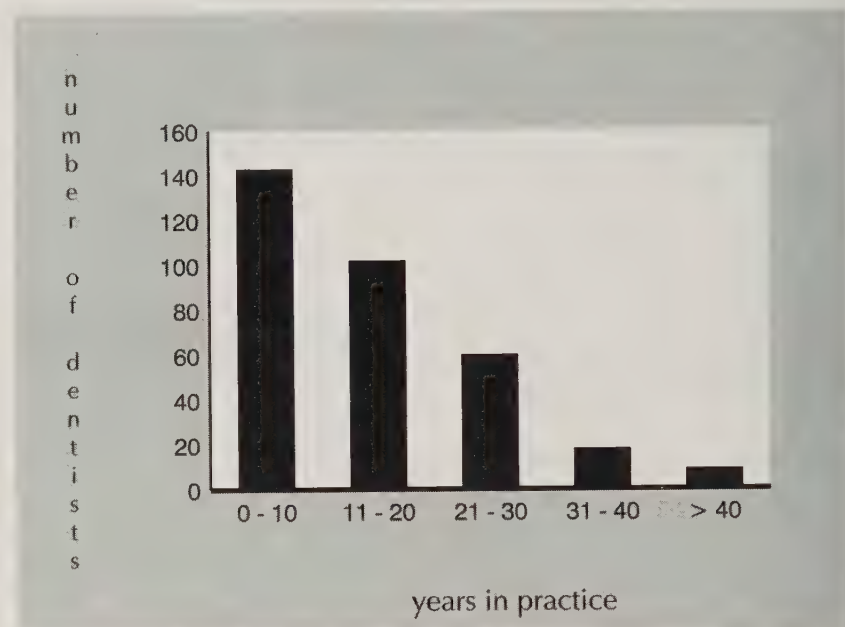


Fig. 2: Practice experience of dentists.

resulted in significant unmet treatment need.¹⁴

The results obtained in a survey of patients treated at the University of Washington are indicative of typical barriers experienced by the handicapped.³ Of the 73 patients responding to the survey, 53 (73 per cent) stated that they had not received dental care on a regular basis in the past. Their responses confirmed the frequently-cited reasons for dental neglect: inability to find a dentist willing to perform treatment, financial and transportation difficulties, lack of motivation, and fear.

A recent survey found that the majority of Canadian and American dental schools offer programs in "dentistry for the handicapped," but there is little agreement as to the proper approach for teaching this topic.¹⁷ Even where programs do exist, data are lacking to show that attitudinal changes in dental students are being translated into behaviors that increase the availability of care to the handicapped.⁸

Although the personal experiences of numerous dentists suggest that handicapped patients can be treated in a private practice setting

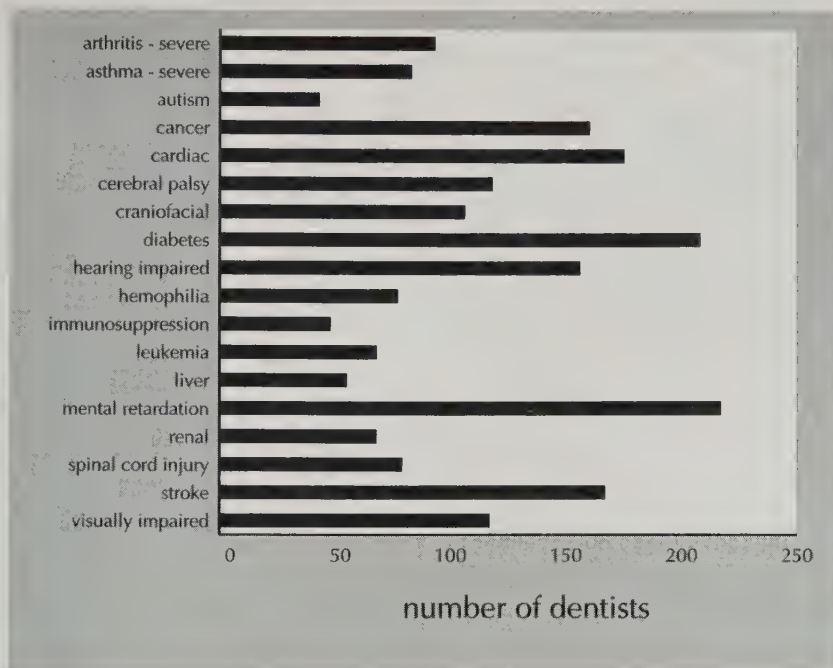


Fig. 3: Types of disabilities among patients. Number of dentists reporting disability.

with minimal effect on remuneration, time required to complete treatment,¹⁸ or the need for special equipment,³ many dentists are either reluctant or unwilling to provide dental care to this segment of the population.¹¹ These dentists often cite their lack of training or knowledge in managing disabled patients,¹³ or a lack of sensitivity and awareness of their special needs.⁸

No studies have been conducted in Canada to determine if the dental profession is meeting the oral health care needs of Canadians with disabilities. The purpose of this study was to survey dental practitioners registered with the Manitoba Dental Association to determine the experiences of Manitoba dentists in providing oral health care to disabled people.

Methods

A 30-question survey was created using Dillman's Total Design Method (TDM).¹⁹ This method involves specific question design, wording and ordering. The questionnaire was developed in conjunction with the board of directors of the Manitoba Dental Association (MDA) and the committee on dentistry for the handicapped. Both bodies reviewed the questionnaire and provided input.

The questionnaire was also field tested before being mailed to dentists.

A list of all dentists licensed to practise in Manitoba in 1990 was obtained from MDA. Coded questionnaires were then mailed to each of these dentists. Geographically, this represented the entire province. A cover letter explaining the purpose of the study and a stamped self-addressed envelope were included with each questionnaire. In accordance with the TDM mailing protocol, questionnaires were mailed at time zero, and then at three weeks and seven weeks after time zero if no response had been received. This method has been shown to substantially increase response rates.

Returned questionnaires were reviewed for completeness. Incomplete questionnaires were traced by identification codes and the respondents contacted by telephone or in person. Data from completed questionnaires were coded, entered into a computer file and summarized. The majority of statistical analysis was descriptive in nature, involving calculation of percentages. Where possible, cross tabulations and chi square were used to test for statistical significance between groups of respondents, patients or procedures.

Results

Of the 550 questionnaires mailed, 342 replies were received, representing a 62 per cent response rate. Eighty-seven per cent ($n = 297$) of the replies were from general practitioners and 13 per cent ($n = 45$) from specialists. Similarly, 89 per cent ($n = 306$) of respondents practised on a full-time basis and 11 per cent ($n = 36$) practised part-time. Seventy-four per cent ($n = 254$) practised in urban settings, while 22 per cent ($n = 76$) practised in rural settings, and six per cent did not specify their practice location. A large number, 62 per cent ($n = 211$), of the respondents were from Winnipeg. Younger, less experienced practitioners were much more likely to provide dental treatment to disabled patients than were older practitioners who had been in practice longer ($p < 0.001$). **Figs. 1 and 2** summarize age and practice experience of the respondents. In addition, a significant relationship was detected between the number of dental chairs in a practice and the likelihood that a dentist would treat disabled patients. Briefly, as the number of chairs increased, the willingness to provide dental care also increased ($p < 0.001$).

Seventy-six per cent ($n = 259$) of the 342 respondents were treating handicapped patients at the time of the survey. Although most dentists (232/259; 90 per cent) reported treating patients with physical disabilities, many also treated patients with mental disabilities (213/259; 82 per cent) or who were both mentally and physically disabled (187/259; 72 per cent). Using an arbitrary physiological systems-based listing of disabilities and diseases, practitioners were asked to indicate the range of disabilities/diseases experienced by the patients who presented at their office for treatment. The most common disability noted was mental retardation, but many dentists also treated patients with a wide variety of physical disabilities and medical conditions. These data are summarized in **Fig. 3**.

In most cases, dentists provided care to disabled patients in a private dental office setting (243/259;

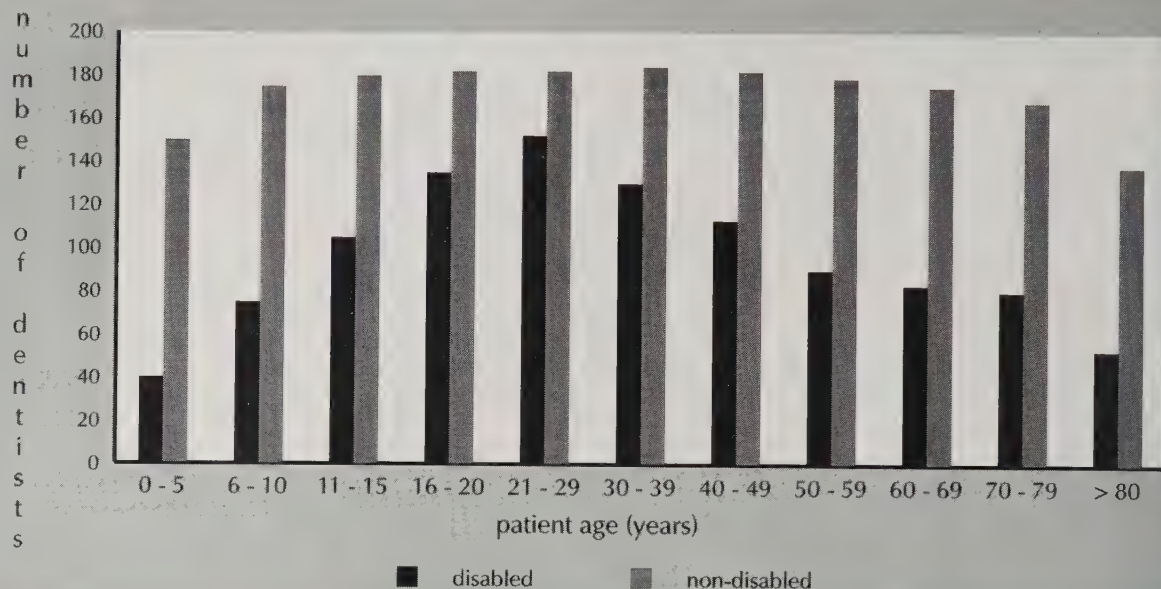


Fig. 4: Patient population of respondents — disabled and non-disabled patients.

94 per cent), and 70 per cent (182/259) stated that their office could accommodate equipment such as wheelchairs and walkers. In addition, 25 per cent (65/259) of the respondents treated patients with disabilities in hospital, while 14 per cent (37/259) treated them in other institutions (i.e. nursing homes, developmental centres, etc.). Eighteen per cent of respondents ($n = 38$) were providing in-service training in preventive mouth care to the caregivers responsible for the day-to-day care of disabled patients.

Dentists were also asked to indicate the age ranges of their disabled and non-disabled patients. While the majority of dentists treated non-disabled patients in all age groups — from preschool children to the elderly — most of their disabled patients were young adults. Few dentists were providing dental care to disabled children under 15 years of age, or to disabled older adults over 50 years of age. These data are summarized in Fig. 4.

Information about the number of disabled people living in a particular jurisdiction versus the number of actual visits they made to dental offices could be considered a measure of the utilization of oral health care services by the disabled. The Canadian Health and Disability Survey reported that in 1984, there were 109,000 adults

and 13,100 children living with disabilities in Manitoba. In comparison, 84 per cent ($n = 217$) of the respondents were treating fewer than five handicapped patients per month, although 20 per cent ($n = 52$) were associated with institutions that provide inpatient or outpatient dental services to disabled people. It is therefore likely that those who were treating more than five disabled patients per month were either associated with an institution or very interested in caring for dental needs of the disabled.

Forty per cent ($n = 136$) of all 342 respondents (both those who treat handicapped patients and those who do not) were willing to accept referrals of handicapped patients. This means that 25 per cent of Manitoba's 550 dentists were willing to treat more handicapped patients than they were treating at the time of the survey.

Dentists were also asked to indicate the range of dental services they provided to disabled people. While some provided the full range, most provided diagnostic and preventive services, followed closely by routine restorative dental treatment. These results are summarized in Fig. 5. Similar data for non-disabled patients was not available. It was therefore not possible to compare the range of services provided between the two groups of patients.

Sixteen per cent of respondents ($n = 41$) booked disabled patients at certain times of the day, generally in the early morning. Most dentists (84 per cent) did not book disabled patients at special times, however, and saw no need to do so. These dentists also reported that they had received no requests to book disabled patients at special times strictly because of the patient's disability.

Financial barriers have been reported to be one reason for the difficulty that disabled people often have in accessing dental care. Questions pertaining to the payment mechanisms used by disabled patients were therefore included in the Manitoba survey. Dentists were asked to identify how disabled patients paid for dental services. Their responses are summarized in Fig. 6.

The most common method of payment, by far, involved welfare or social assistance programs administered by local municipalities, the province or the federal government. Ninety-seven per cent ($n = 252$) of dentists reported billing either a provincial social allowance or welfare program, and 13 per cent ($n = 34$) of dentists indicated that the institution or social agency caring for the disabled individual paid for his or her dental treatment. Fifty per cent ($n = 130$) of dentists also reported that some disabled patients paid for dental

Relax!

As a kid, when I went to the dentist, every "buzz" and "clink" and "grind" made me anxious. But once my dentist explained what the instruments did, I could sit back and relax, knowing everything would be OK.

Now that I'm a dentist myself, I've felt that same anxiety trying to sort out what all this new technology and automation means to my practice. And just like my former

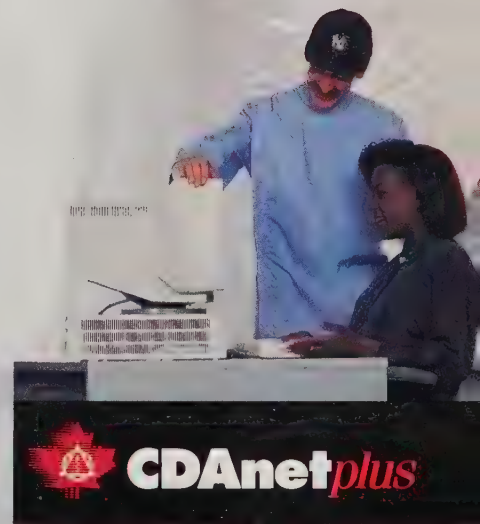
dentist, **CDAnetplus** helps me understand what's going on, so my staff and I can relax and concentrate on making my patients more comfortable.

CDAnetplus provides the most flexible, up-to-date E-mail, credit card and cheque verification services available.

So relax. Call 1-800-267-6354 and find out how you can put **CDAnetplus**' leading edge management technology to work for you.



CANADIAN
DENTAL
ASSOCIATION



CDAnetplus

Dentistry's National
Information Network



April

Dental Health Month

April
Dental Health Month

					1		
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28	29	
30							



April is Dental Health Month — a month-long celebration of the importance of good dental care. And

for some timely awareness tools your patients can really sink their teeth into, take a look at these tooth-toned treasures from CDA!

Talk about dressed for success — comfortable and easy care "Keep Smiling" golf shirts fit the occasion to a tee.



Here's a gift your patients will really get stuck on...

"Keep Smiling" stickers, featuring Bob's beautiful smile, are an economical way to help patients remember to stick with the habit of good dental care.

If only the walls could talk! Now they can speak volumes with gentle reminder plaques, featuring important dental health

messages. It's wall-to-wall wisdom your patients can use!

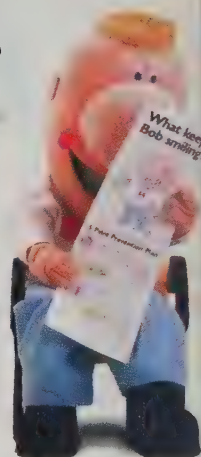
Read all about it!

For patients who want to get a bite on all the facts, spread the word with CDA's brochure and pamphlet series featuring information and advice on a variety of dental concerns and treatments.



Open wide and say

"Bob"... CDA's just-for-fun mascot is your perfect partner in promoting dental health. Rent our costume and have Bob drop by your office to keep patients of all ages smiling. While he's there, he'll want to pass around his vividly coloured posters featuring his five-point prevention plan for totally terrific teeth.



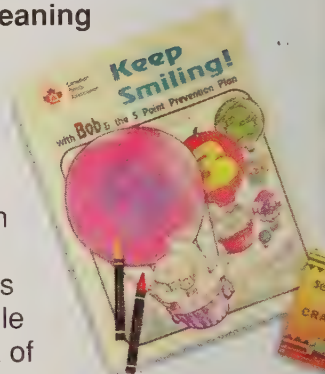
This could be the start of something big! Give your future patients a head start on a healthy smile with First Teeth, an informative brochure that helps Moms and Dads learn how to care for tiny teeth.

Take dental health to new heights! Awareness soars with colourful balloons that give little patients a real lift when it comes to taking care of their teeth.



Dental health takes on new shades of meaning

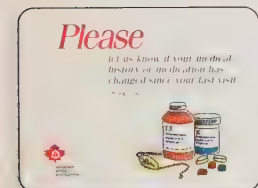
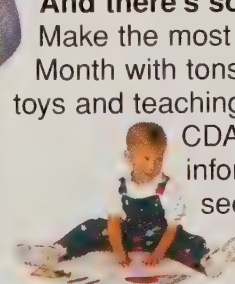
with colouring books (with crayons!) featuring Bob and his five-point prevention plan. Let little patients express themselves while learning the art of caring for their teeth.



And there's so much more.

Make the most of Dental Health Month with tons of toothy toys and teaching aids from CDA. For more information, see our latest catalogue.

Call 1-800-267-6354 to order... or fax us at (613) 523-7736.



**CANADIAN
DENTAL
ASSOCIATION**

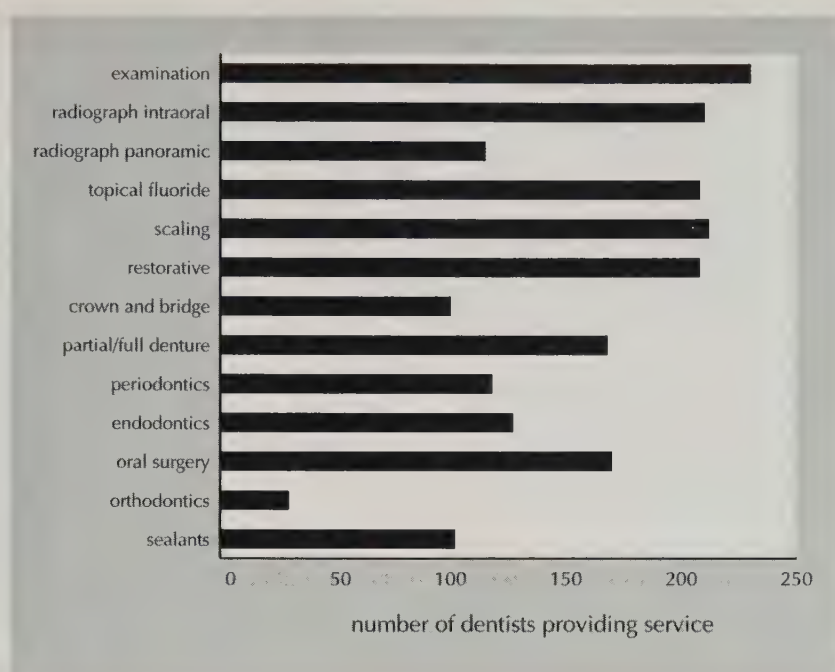


Fig. 5: Dental services provided to patients with disabilities in Manitoba.

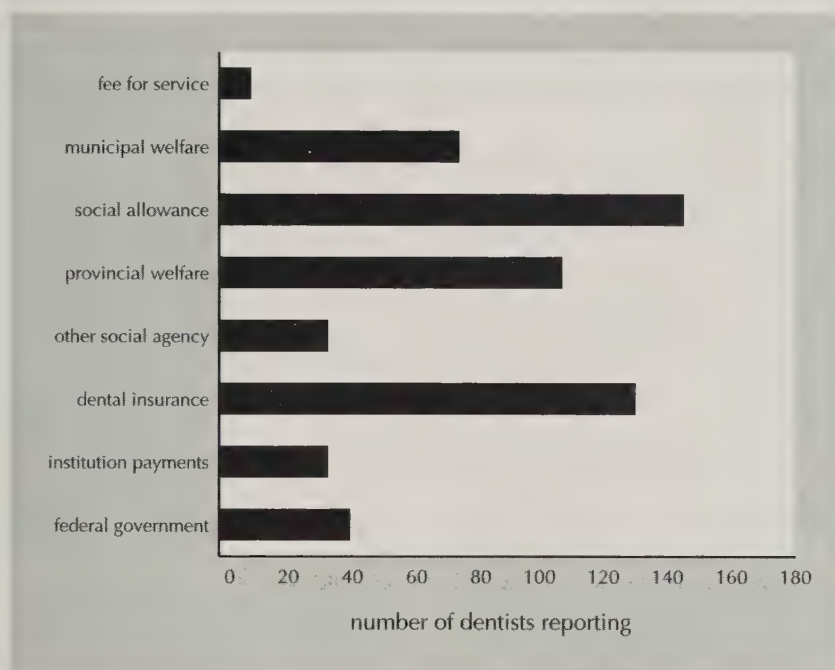


Fig. 6: Payment mechanisms used by patients with disabilities in Manitoba.

services through private dental insurance. Payment by disabled patients on a fee-for-service basis was almost totally non-existent.

Half ($n = 130$) of the survey respondents reported that they only received adequate compensation for services rendered from 50 per cent of their disabled patients. In other words, dentists were unable to collect their usual and customary fee. Adequate compensation was defined as the usual and customary fee charged for a procedure, for example, the current pro-

vincial fee guide. Additional considerations included the difficulty of the procedure, as perceived by the dentist, and the time required to complete it for a particular patient. However, 27 per cent ($n = 69$) of respondents reported that they were always able to collect their customary fee for services rendered.

In the course of providing dental care to disabled patients, dentists must often consult with a patient's physician about his or her medical status. However, it was

clear from dentists' responses that most consulted frequently with their patients' individual caregivers and other professionals such as social and welfare workers, institutional staff, public health nurses, teachers of the disabled, and occupational and rehabilitation therapists (Fig. 7).

The method of pain control used in rehabilitative dental treatment was the same for both disabled and non-disabled patients. Also, the use of oral, intramuscular and intravenous sedation also did not differ between the two patient groups. However, although inhalational sedation was used with both groups of patients, twice as many dentists used this modality for non-disabled patients as disabled patients.

Only 10 per cent ($n = 26$) of respondents reported using restraint for patient control. The most common method used was restraint provided by the dental assistant. In fact, 36 per cent ($n = 93$) of dentists reported that their staff had received specific training in dealing with disabled patients. The most common method of training was instruction from the dentist (44 per cent). Attendance at courses was the next most common method, with 12 per cent of dentists using this method. Devices such as papoose boards, pedi-wraps and leg and arm restraints tended to be limited to hospital-based dentists and pediatric dentists.

Thirty-two per cent ($n = 84$) of the dentists treating disabled patients had taken continuing education courses in the area of special patient care within the five years prior to the survey, and 59 per cent ($n = 152$) reported that they would be willing to attend a continuing education course on special patient care if it were offered at the University of Manitoba.

Discussion

The study involved a survey of all licensed dentists in Manitoba. Information was requested on the dentists' method of practice, training and experience in treating the handicapped, as well as the types of handicapped patients who attended for treatment, the range of dental services provided to this pa-

tient group, and the behavior management modalities used with the handicapped. The survey also asked dentists about the methods of payment for treatment rendered to disabled patients, their association with institutions for the handicapped and other health or primary caregivers who work with the handicapped, their reasons for referral of handicapped patients, and the problems they have encountered in providing care to this patient group, either in a private office setting or elsewhere. It was encouraging to find that a large number of dentists were willing to provide a broad range of services to persons with disabilities.

It is known that practitioners who have had training in treating patients with disabilities, such as oral surgeons and pediatric dentists, are more likely to accept these individuals as patients.^{4,6} In fact, the average pediatric dentist treats three times as many handicapped patients as the average general practitioner.³ However, with a total registration of approximately 600 dentists in the province of Manitoba, only seven of whom are pediatric dentists, it is clear that the majority of dental treatment for the disabled is being provided by general practitioners.

This study also showed that younger, less experienced practitioners were more willing to treat disabled patients than their older, more experienced colleagues were. There are several reasons that could explain this phenomenon. In recent years, dental students at the University of Manitoba have received formal instruction in the provision of oral health care to disabled people. Hence, they may have felt more comfortable providing dental care to special patients in a variety of settings than their older colleagues did. In addition, because of increasing competition in the dental marketplace, they may have perceived a need to broaden their recall, preventive and restorative patient base to include disabled patients who, historically, would have sought only emergency dental care.

It was reassuring to note that more than half of the respondents

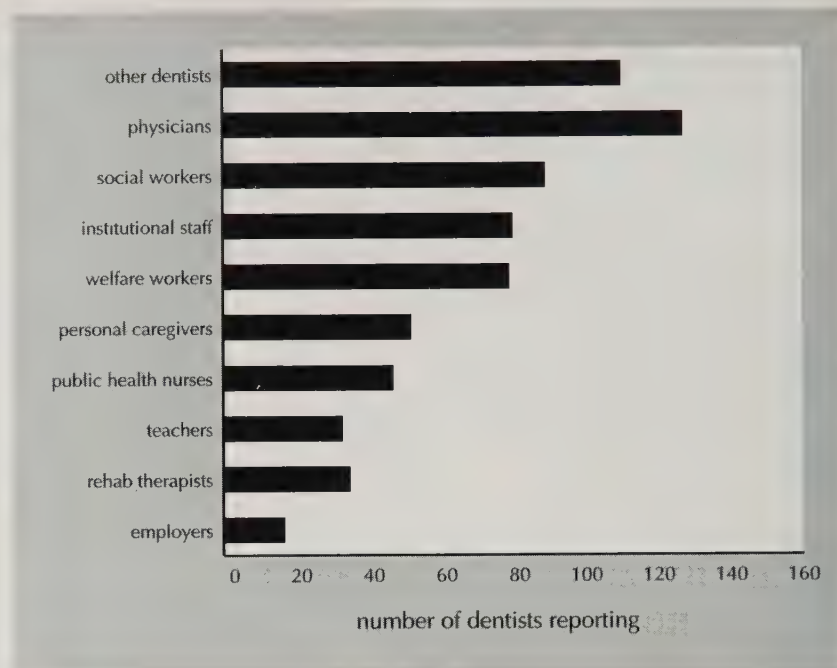


Fig. 7: Consultations by dentists when treating patients with disabilities.

were interested in obtaining more education in the area of special patient care, and that one quarter of all Manitoba dentists were willing to accept patients with disabilities into their practices.

Concern has often been expressed in Canada about the concentration of the practising dental population in urban centres,²⁰ even in a period when an oversupply of dentists seems to be developing.²¹ This has a significant impact on the accessibility to dental services and the utilization patterns of these services by the disabled persons living outside of urban centres. In this study, 74 per cent of the respondents reported practising in an urban centre versus 22 per cent in a rural setting. However, practitioners did not report problems with patient access to dental treatment as a result of practice location. In fact, this study revealed that a significant number of dentists were leaving their private offices to provide care to disabled patients in other settings such as hospitals, nursing homes, homes for the aged and developmental centres.

In assessing the oral health status of disabled people, or providing oral health care to them, it may be more important to consider functional ability and disability rather than a medical diagnosis. Furthermore, it is frequently not

the disability itself, but the level of profoundness of the disability and its effect on the patient's functional ability to either accept dental treatment or to use preventive measures, that influences dental disease.²² The implication of this observation for dentists is that consultation with other health care workers involved with the disabled is often necessary. A reassuring finding of this study was that dentists did consult widely with other professionals to determine not only the medical status, but also the functional ability of disabled patients and their caregivers to maintain the patient's oral health.

Current recommendations from the Canadian Dental Association suggest regular visits to the dentist at six-month intervals unless there are factors such as the effectiveness of a patient's personal hygiene program that may require the patient to visit the dentist more or less frequently. This recommendation may not be valid for a disabled individual, who may have profound functional impairment and be functionally unable to maintain oral health. This is particularly true for those who are disabled and are dependent on non-disabled caregivers, who may in turn be unaware of the need for more frequent visits unless they have been educated by the dental

staff. Furthermore, the provincial and municipal social programs that fund the majority of dental care for disabled adults, in most cases, do not allow for hygiene care administered in a dental office more frequently than once every six months. Social program budget cutbacks may further erode these basic, but urgently necessary, services.

The dental services received by disabled people differ from those received by other patients. Ripa²³ observed that disabled individuals are unique in that the type of dental care they receive is determined to a greater extent by the disabling condition than by the dental condition. However, in Levine's Ontario survey of Community Dental Services to the Handicapped,² more than half of the parents who responded did not perceive a difference in either the type or cost of the treatment received by their handicapped child and his or her siblings. In this study, the majority of practitioners provided a range of services to their disabled patients that was similar to the services provided to their non-disabled patients. There was also a statistically significant trend for larger offices, with more dental chairs, to be more willing to treat disabled patients than smaller offices. This trend represented the dentists' delegation of preventive services to dental hygienists and preventive dental assistants.

Some studies have shown that the cost of dental treatment is still considered to be a significant barrier to routine dental care for disabled people.^{2,12} This perception may occur because many parents or guardians are required to distribute finite financial resources toward services and equipment that are necessary for their disabled charge to have a semblance of normalcy in day-to-day living. Hence, a process of prioritization of services occurs. Since dentistry has been and still is regarded by many as a low-priority health service that is expensive, dental care has often been avoided until a crisis arises. In addition, the majority of social programs that cover the cost of dental care for the handi-

capped (social allowance, municipal, provincial or federal welfare) are directed at those who are eligible for these benefits, i.e., handicapped adults. Many of these programs exclude handicapped children unless their parents are eligible. In addition, many social programs are coming under increasing pressure to reduce or eliminate benefits such as dental care.

This study revealed that social service programs were the most common payment mechanisms used by the disabled to pay for dental services. A significant number of dentists reported only receiving adequate compensation for the services rendered to disabled patients in half of the cases they treated. Clearly, this is worrisome. The complexity of medical histories, frequency of consultation, need for longer or more frequent appointments to complete treatment because of behavioral considerations, and the increased responsibility and staffing associated with the use of sedation or general anesthesia all serve to increase the cost of providing quality dental care to the disabled. Increasing program support so that optimum preventive therapy can be provided to disabled people would significantly improve both the oral health of the disabled and their quality of life. In return, the need for costly, crisis-oriented treatment services will decline over time.

Future studies involving disabled people and their caregivers would provide an interesting contrast to the results of this study. This information may identify weaknesses in current dental education as well as deficiencies in local facilities, such as hospitals, which may not be providing sufficient operating room access or anesthesia services. The perceptions of parents and guardians as to where and how often the disabled individuals in their care receive dental care, as well as differences in either the cost or type of care provided, payment mechanisms, problems in obtaining dental care, preventive home care programs and satisfaction with dental care

would not only be valuable, but are also necessary for the development of programs that respond to the special needs of special people. ■

Acknowledgements: This study was supported by the Manitoba Health Research Council, Grant Number 1210 (ARM).

Dr. Milnes is an associate professor in the department of pediatric dentistry, University of Toronto.

Dr. Tate is on the staff of the biostatistical consulting unit, faculty of dentistry, University of Manitoba.

Ms. Perillo is a research assistant in the department of preventive dental science, faculty of dentistry, University of Manitoba.

Reprint requests to: Dr. A.R. Milnes, Department of Pediatric Dentistry, University of Toronto, 124 Edward Street, Toronto, ON M5G 1G6.

References

1. Rogers, R.E. et al. Keynote address. National Conference on Dental Care for the Handicapped. *J Dent Educ* 44:128-135, 1980.
2. Levine, N. Community responses to the disabled and the dental profession's responsibility. *J Can Dent Assoc* 51:35-42, 1985.
3. Stiefel, D.J. Delivery of dental care to the disabled. *J Can Dent Assoc* 47:657-662, 1981.
4. Roberts, R.E., McCorry, O.F., Glasser, J.H. et al. Dental care for handicapped children re-examined: II — dimensions for dental practice. *J Public Health Dent* 38:136-147, 1978.
5. Swerdloff, M. Problems and concerns of the handicapped. National Conference on Dental Care for the Handicapped. *J Dent Educ* 44:131-135, 1980.
6. Mathewson, R.J. and Beaver, H.A. A survey of dental care for handicapped children. *J Public Health Dent* 30:45-52, 1970.
7. Siegal, M.D. Dentists' reported willingness to treat disabled patients. *Special Care Dent* 5:102-108, 1985.
8. Casamassimo, P.S. The great educational experiment: has it worked? *Special Care Dent* 3:101-106, 1983.
9. Stiefel, D.J. Dentistry for persons with mental and physical disabilities; In: *Current Treatment in Dental Practice*. N.L. Levine, ed., Toronto, W.B. Saunders, 1986.
10. Stiefel, D.J., Shaffer, S.M., Bigelow, C. Dentists' availability to treat the disabled patient. *Special Care Dent* 1:244-249, 1981.
11. Leviton, F.J. The willingness of dentists to treat handicapped patients: a summary of eleven surveys. *J Dent Handicapped* 5:13-17, 1980.

12. Gotowka, T.D., Johnson, E.S. and Gotowka, C.J. Costs of providing dental services to adult mentally retarded: a preliminary report. *Am J Public Health* 72:347-351, 1976.

13. Government of Ontario Task Force on Community Dental Services for Mentally Retarded and Physically Handicapped. N. Levine, Chairman, 1977.

14. Beck, J.D. and Hunt, R.J. Oral health status in the United States: Problems of special patients. *J Dent Educ* 49:407-425, 1985.

15. Report of the Canadian Health and Disability Survey 1983-1984. Statistics Canada, No. 82-555E.

16. Wright, G.Z. and Friedman, C.S. Dentistry for the handicapped: a survey of predoctoral teaching programs. *Special Care Dent* 7:62-64, 1987.

17. Nowak, A.J. *Dentistry for the Handicapped Patient*. St. Louis, C.V. Mosby, 1976.

18. Nelson, L.P., Sweeney, E.A. and Nelson, B.N. Dental treatment time in a population of patients with handicapping conditions. *Special Care Dent* 7:67-69, 1987.

19. Dillman, D.A. *Mail and Telephone Surveys: the Total Design Method*. Wiley and Sons, New York, 1978.

20. Parmenter, D.V. Dental manpower. *J Can Dent Assoc* 52:64-65, 1986.

21. Lewis, D.W. Dental manpower supply and demand projections and changing demography and dental disease. *J Can Dent Assoc* 52:33-44, 1986.

22. Tesini, D.A. An annotated review of the literature of dental caries and periodontal disease in mentally retarded individuals. *Special Care Dent* 1:75-87, 1981.

23. Ripa, L.W. *Recommendations for dental caries prevention in non-institutionalized handicapped children*. Dental Guidance Council for Cerebral Palsy, New York, 1974.

Breathe Easy

A PROGRAM
ABOUT LIVING
WITH LUNG DISEASE

Call us for more information today.

THE  LUNG ASSOCIATION

JOURNAL

February/
Février
1995
Vol. 61
No. 2

158

PERIDEX® (CHLORHEXIDINE GLUCONATE 0.12%)

PERIDEX ORAL RINSE

(Chlorhexidine Gluconate 0.12%)

Antigingivitis Oral Rinse

ACTIONS, CLINICAL PHARMACOLOGY: Peridex Oral Rinse (0.12% Chlorhexidine Gluconate) or Peridex provides antimicrobial activity during oral rinsing which is maintained between rinsings. Microbiologic sampling of plaque has shown a general reduction of both aerobic and anaerobic bacterial counts ranging from 54-97% through six months' clinical use. Rinsing with Peridex inhibits the buildup and maturation of plaque by reducing certain microbes regarded as gingival pathogens, thereby reducing gingivitis. Peridex provides antimicrobial activity during rinsing and for several hours thereafter.

No significant changes in bacterial sensitivity, overgrowth of potentially opportunistic organisms or other adverse changes in the oral microbial flora were observed following the use of Peridex for six months. Three months after Peridex use was discontinued, the number of bacteria in plaque had returned to pre-treatment levels and sensitivity of plaque bacteria to chlorhexidine gluconate remained unchanged.

Studies conducted with human subjects and animals demonstrate that any ingested chlorhexidine gluconate is poorly absorbed from the gastrointestinal tract. Excretion of chlorhexidine gluconate occurred primarily through the feces (approximately 90%). Less than 1% of the chlorhexidine gluconate ingested by these subjects was excreted in the urine.

INDICATIONS AND CLINICAL USE: Peridex is indicated for use as part of a professional program for the treatment of moderate to severe gingivitis, and for management of associated gingival bleeding and inflammation between dental visits. For patients having coexisting gingivitis and periodontitis, see PRECAUTIONS.

CONTRAINDICATIONS: Peridex should not be used by persons who are known to be hypersensitive to chlorhexidine gluconate or other formula ingredients.

WARNINGS:

USE IN PREGNANCY: Reproduction and fertility studies with chlorhexidine gluconate have been conducted. No evidence of impaired fertility was observed in male and female rats at doses up to 100 mg/kg/day, and no evidence of harm to the fetus was observed in rats and rabbits at doses up to 300 mg/kg/day and 40 mg/kg/day, respectively. These doses are approximately 100, 300, and 40 times that which would result from a person ingesting 30 ml (2 capfuls) of Peridex (0.12% chlorhexidine gluconate) per day. Since controlled studies in pregnant women have not been conducted, the benefits of use of the drug in pregnant women should be weighed against possible risk to the fetus.

NURSING MOTHERS: It is not known whether this drug is excreted in human milk. In parturition and lactation studies with rats, no evidence of impaired parturition or of toxic effects to suckling pups was observed when chlorhexidine gluconate was administered to dams at doses that were over 100 times greater than the dose which would result if a person ingested the entire recommended dose of Peridex (0.12% chlorhexidine gluconate) on a daily basis.

USE IN CHILDREN: Since the safety and efficacy of Peridex in children has not yet been fully established, the benefits of its use should be weighed against the possible risks.

PRECAUTIONS:

1. For patients having coexisting gingivitis and periodontitis, the absence of gingival inflammation following treatment with Peridex may not be indicative of the absence of underlying periodontitis. Appropriate treatment of periodontitis is therefore indicated.

2. Peridex may cause staining of oral surfaces such as the film on tooth surfaces, restorations, and the dorsum of the tongue. Stain will be more pronounced in patients who have heavier accumulations of unremoved plaque.

Stain resulting from use of Peridex does not adversely affect the health of gingivae or other oral tissue. Stain can be removed from most tooth surfaces by conventional professional prophylactic techniques. Additional time may be required to complete the prophylaxis.

Discretion should be used when treating patients with exposed root surfaces or anterior facial restorations with rough surfaces or margins. If natural stains cannot be removed from these surfaces by a dental prophylaxis, patients should be excluded from Peridex treatment if the risk of permanent discoloration is unacceptable. Stains in these areas may be difficult to remove by dental prophylaxis and on rare occasions may necessitate replacement of these restorations.

3. A few patients may experience a slight and temporary alteration in taste perception while undergoing treatment with Peridex. Most of these patients accommodate to this effect with continued use of Peridex.

4. For maximum effectiveness the patient should avoid rinsing their mouth, eating or drinking for about 30 minutes after using Peridex.

ADVERSE REACTIONS: No serious systemic reactions associated with use of Peridex were observed in clinical testing. However, some adverse reactions have been reported in studies with Peridex or other chlorhexidine-containing mouth rinses. The most common side effects associated with chlorhexidine gluconate oral rinses are (1) an increase in staining of oral surfaces, (2) an increase in supra gingival calculus and (3) a slight and temporary alteration in taste perception. (see PRECAUTIONS). Epithelial irritation and superficial desquamation of the oral mucosa have been noted in studies of children using 0.12% chlorhexidine gluconate which were reversible upon discontinuation.

There have been rare cases of parotid gland swelling and inflammation of the salivary glands, in patients using Peridex.

SYMPTOMS AND TREATMENT OF OVERDOSAGE: Ingestion of 30 or 60 ml of Peridex (0.12% chlorhexidine gluconate) by a small child (10 kg or less body weight) might result in gastric distress, including nausea, or signs of alcohol intoxication. Medical attention should be sought if more than 120 ml of Peridex is ingested by a small child or if signs of alcohol intoxication develop.

DOSAGE AND ADMINISTRATION: Peridex therapy should be initiated directly following a dental prophylaxis. Patients using Peridex should be reevaluated and given a thorough prophylaxis at intervals no longer than six months; they should be referred for periodontal consultation as necessary.

Recommended use is twice daily oral rinsing for 30 seconds, morning and evening after tooth brushing. Usual dosage is 15 mL (marked in cap) of undiluted Peridex. Peridex is not intended for ingestion and should be expectorated after rinsing. Rinsing the mouth, eating or drinking should be avoided for about 30 minutes after using Peridex.

The suggested initial course of therapy is 3 months, at which time patients should be recalled for evaluation. At the time of the recall visit, the dental professional should:

— Evaluate progress, remove any stain, and reinforce proper home care techniques.

— If gingival inflammation and bleeding is controlled, discontinue Peridex therapy and recall the patient in three months to assess gingival health.

— If gingival inflammation and bleeding persists, continue Peridex therapy for an additional 3 months and schedule a three-month recall for evaluation.

— Evaluate for evidence of epithelial irritation, desquamation and parotitis.

The following generally accepted grading scheme may be of use in evaluating the severity of gingivitis.

Loe and Silness
GINGIVAL INDEX (GI)

Grade	Description
1	Normal gingiva, no inflammation, no discoloration, no bleeding.
2	Mild inflammation, slight color change, mild alteration of gingival surface. No bleeding.
3	Moderate inflammation, erythema, swelling, bleeding on probing or when pressure applied.
4	Severe inflammation, severe erythema and swelling, tendency toward spontaneous hemorrhage, some ulceration.

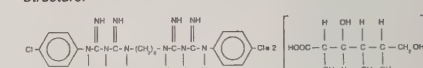
An occasional missed dose can be ignored if the patient is generally compliant with the prescribed regimen.

PHARMACEUTICAL INFORMATION DRUG SUBSTANCE

Proper Name: Chlorhexidine gluconate (U.S.A.N.)

Chemical Name: 1,1'-hexamethylene bis [5- (p-chlorophenyl) biguanide] di-D-gluconate

Structure:



Molecular Weight: 897.8

Description:

Chlorhexidine has basic character and exists in the di-cationic form at physiologic pH. The two protonic positive charges become somewhat localized on the bi-guanide portion of the molecule. Both pKa's are reported as 10.78 ± 0.06. The gluconate salt is soluble in excess of 70% (w/v) in water at 20°C.

At 19-21% w/v chlorhexidine gluconate solution is colourless to pale straw-coloured and is odourless to almost odourless (British Pharmacopoeia).

COMPOSITION: Peridex contains 0.12% chlorhexidine gluconate in a base containing water, alcohol, glycerin, PEG-40 sorbitan di-isostearate, flavour, saccharin sodium and FD&C Blue #1 Dye.

STABILITY AND STORAGE: Store above freezing (0°C).

INCOMPATIBILITIES: None known.

SPECIAL INSTRUCTIONS: None.

AVAILABILITY OF DOSAGE FORM: Peridex oral rinse (0.12% chlorhexidine gluconate) is supplied as a blue liquid in 475 mL amber plastic bottles with child-resistant dispensing closures.

Store above freezing (0°C).

REFERENCE

1. Grossman E., Reiter G., Sturzenberger OP, et al. Six-month study of the effects of a chlorhexidine mouthrinse on gingivitis in adults. *Journal of Periodontal Research*. 1986;21(suppl 16):33-43.

© Peridex is a registered trademark of the Procter & Gamble Company. Procter & Gamble Inc., licensee

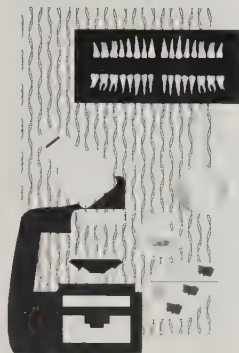
Product Monograph available upon request:

Procter & Gamble Inc.

P.O. Box 355, Station A
4711 Yonge Street
Toronto, Ontario
M5W 1C5

PAAB

RECHERCHE



Canines inférieures permanentes à deux racines

Raymondien Ouellet, BA, DDS

Sainte-Foy, Québec

SOMMAIRE

Une revue de littérature révèle des imprécisions sur le nombre de racines que possèdent les canines inférieures permanentes. L'auteur de cet article, après avoir examiné 806 spécimens, conclut que 95 p. cent des canines inférieures ont une racine et 5 p. cent de ces dents possèdent deux racines.

Mots clés: canines inférieures permanentes, racines dentaires, anatomie dentaire.

ABSTRACT

When one reviews the literature, it is quite apparent that there seems to be many assumptions relative to the number of roots found in mandibular permanent canines. After having examined 806 specimens, the author of this article found that 95 per cent of mandibular canines had one root and five per cent had two roots.

Keywords: mandibular permanent canines, dental roots, dental anatomy.

Introduction

Connaître le nombre de racines que les dents possèdent peut souvent aider le dentiste lors d'un diagnostic ou de l'exécution de certains traitements. Après avoir consulté la littérature, il faut admettre qu'il n'existe pas beaucoup de précisions pour les canines inférieures permanentes. Pour éclaircir le

problème, l'auteur de cet article a entrepris une recherche afin de déterminer avec exactitude les pourcentages où ces dents possèdent une ou deux racines.

Revue de littérature

Une revue de littérature montre que plusieurs auteurs¹⁻¹⁴ utilisent des termes vagues pour indiquer que les canines inférieures permanentes possèdent deux racines. Ainsi, il est mentionné que cette dent a «assez rarement», «assez fréquemment», «occasionnellement», «très occasionnellement», «sur quelques spécimens», «dans de rares cas», . . . deux racines: une vestibulaire et une linguale. Un autre auteur, Laurichesse,¹⁵ rapporte que cette dent présente dans 2 p. cent des cas deux racines sans citer la quantité de dents qui a servi à établir ce pourcentage.

Découvrant l'imprécision sur le sujet, l'auteur de cet article a entrepris une recherche en utilisant un grand nombre de dents pour que les résultats soient plus plausibles.

Matériel et méthode

Pour cette étude, 806 canines inférieures permanentes ont été sélectionnées à partir de dents extraites qui provenaient de différents cliniques dentaires et laboratoires de pathologie de certains centres hospitaliers. L'âge, le sexe, la race des patients et la raison des extractions ne sont pas connus. Les dents ont trempé dans une so-

lution de 6 p. cent d'hypochlorite de sodium pendant trois heures, ont été rincées à l'eau courante durant une demi-heure et brossées pour enlever les résidus. Ces canines inférieures ont été identifiées selon les différentes caractéristiques de la couronne.

Puis, les dents ont été classifiées en deux groupes. Le premier groupe comprenait les canines inférieures à une seule racine. Le deuxième regroupait les dents qui avaient deux racines distinctes, une vestibulaire et une linguale ou qui présentaient un début de bifurcation.

Ensuite, les canines à deux racines ont été divisées en trois catégories selon leur niveau de bifurcation radiculaire:

Catégorie A: canines inférieures où la bifurcation occupait une partie du tiers apical (**fig. 1**).

Catégorie B: canines inférieures où la bifurcation radiculaire englobait tout le tiers apical (**fig. 2**).

Catégorie C: canines inférieures où la bifurcation radiculaire commençait au niveau du tiers moyen (**fig. 3**).

Résultats et discussion

Le **tableau 1** montre que, parmi les 806 canines inférieures permanentes examinées, 40, soit 4,96 p. cent, présentent deux racines et 766, soit 95,04 p. cent, possèdent une racine. En arrondissant ces pourcentages pour en faciliter la mémorisation, il en résulte que 5

JOURNAL

February/
Février
1995
Vol. 61
No. 2



Fig. 1: Canine inférieure où la bifurcation occupe une partie du tiers apical.

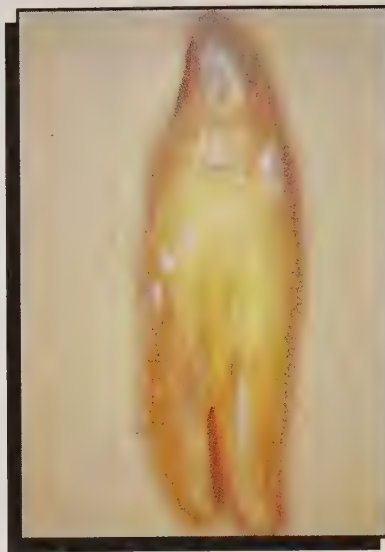


Fig. 2: Canine inférieure où la bifurcation radiculaire occupe tout le tiers apical.



Fig. 3: Canine inférieure où la bifurcation radiculaire s'étend jusqu'au tiers moyen.

p. cent des canines inférieures ont deux racines et 95 p. cent montrent une racine.

Le **tableau II** représente la répartition des canines inférieures selon les trois catégories. Ainsi, 40 p. cent des canines inférieures, soit 16 dents, ont une bifurcation radiculaire qui englobe seulement une partie du tiers apical. Dans la catégorie B, 15 dents, soit 37,5 p. cent, ont une séparation radiculaire qui occupe tout le tiers apical. Neuf canines, soit 22,5 p. cent, se classent dans la catégorie C où les deux racines sont séparées jusqu'au tiers moyen.

Cette recherche s'avérait donc utile puisque la revue de littérature donnait peu d'informations. Dorénavant, des termes vagues

comme «assez rarement», «occasionnellement», «dans de rares cas» . . . peuvent être remplacés par des pourcentages précis.

Conclusion

Comme la revue de littérature était imprécise quant au nombre de racines observées sur les canines inférieures permanentes, l'auteur de cet article a voulu éclaircir le problème en apportant les précisions suivantes. Parmi les 806 canines inférieures examinées, il conclut que 95 p. cent de ces dents possèdent une seule racine et 5 p. cent présentent deux racines. De plus, 40 p. cent de ces dents montrent une bifurcation radiculaire qui occupe une partie du tiers apical. Dans 37,5 p. cent

des cas, les deux racines sont visibles dans tout le tiers apical. La séparation des racines débute au niveau du tiers moyen chez 22,5 p. cent de ces canines. Ces résultats pourront donc aider le dentiste dans diverses disciplines de la dentisterie.

Remerciements: Je tiens à remercier le docteur Denis Robert pour la prise des photographies.

D' Raymondien Ouellet est professeur et responsable de l'appareil masticateur à la faculté de médecine dentaire à l'Université Laval.

Demandes de tirés à part: D' Raymondien Ouellet, Faculté de médecine dentaire, Université Laval, Sainte-Foy, Québec G1K 7P4

Tableau I

Répartition du nombre de racines pour les canines inférieures permanentes

	1 racine	2 racines	Total
Nombre de dents	766	40	806
%	95,04%	4,96%	100%
% arrondi	95%	5%	100%

Tableau II

Niveau de bifurcation des racines des canines inférieures permanentes

	moins du 1/3 apical	1/3 apical	1/3 moyen	Total
Nombre de dents	16	15	9	40
%	40%	37,5%	22,5%	100%

Références

1. Black, G.V. *Descriptive anatomy of the human teeth*, 4th Ed. Philadelphia, The S.S. White Dental Manufacturing Co., 1902.
2. Green, D. Morphology of the pulp cavity of the permanent teeth. *Oral Surg Oral Med Oral Pathol* 8:743-759, 1955.
3. Ingle, J.I. *Endodontics*, 1st Ed. Philadelphia, Lea and Febiger, 1965.
4. Wheeler, R.C. *A textbook of dental anatomy and physiology*, 4th Ed. Philadelphia and London, W.B. Saunders Co., 1969.
5. Kraus, B.S., Jordan, R.E. et Abrams, L. *Dental anatomy and occlusion*, 1st Ed. Baltimore, The Williams and Wilkins Co., 1969.
6. Scott, J.H. et Symons, N.B.B. *Introduction to dental anatomy*, 6th Ed. Edinburgh and London, Churchill Livingstone, 1972.
7. Permar, D. *An outline for dental anatomy*. Philadelphia, Lea and Febiger, 1974.
8. Sicher, H. et DuBrul, E.L. *Oral anatomy*, 6th Ed. Saint-Louis, The C.V. Mosby Co., 1975.
9. Weine, F.S. *Endodontic therapy*, 2nd Ed. Saint-Louis, The C.V. Mosby Co., 1976.
10. Slowey, R.R., *Root canal anatomy — Road map to successful endodontics*. *Dent Clin North Am* 23:555-73, 1979.
11. Brand, R. et Isselhard, D.E. *Anatomy of orofacial structures*, 2nd Ed. Saint-Louis, The C.V. Mosby Co., 1982.
12. Woelfel, J.B. *Dental anatomy: its correlation with dental health service*, 3rd Ed. Philadelphia, Lea and Febiger, 1984.
13. Cohen, S. et Burns, R.C., *Pathways of the pulp*, 3rd Ed. Saint-Louis and Toronto, The C.V. Mosby Co., 1984.
14. Lautrou, A. *Abrégé d'anatomie dentaire*, 2^e Ed. Paris, 1986.
15. Laurichesse, J.-M., Maestroni, F. et Breillat, J. *Endodontie clinique*, Paris, Editions CDP, 1986.



"At our house, my Mom likes me to read to her, because she can't read by herself."

Eric Thom, 7

Tens of thousands of people in Canada have multiple sclerosis, stopping them from doing the things that others do without a second thought.

Become a volunteer. Make a donation. Together, we'll find a way to stop multiple sclerosis.

CONTACT US TODAY!

Multiple Sclerosis

SOCIETY OF CANADA

250 Bloor Street East, Suite 820,
Toronto, Ontario M4W 3P9

SERVICES • RESEARCH • EDUCATION

SOCIAL ACTION • FUNDRAISING • VOLUNTEERS

YOUR 'DEAD' INVENTORY CAN BRING LIFE TO HUNGRY CHILDREN

Do you have product sitting in storage somewhere? Stuff that you know you aren't going to use or sell? Just taking up space and costing you money?

If it's not going to be used anyway, why not get rid of it and at the same time bring help and hope to hungry children in Canada and throughout the world?

Through a unique program of Canadian Feed the Children (registered charity #0734434-09) corporations can donate surplus inventory to a charity. Canadian Feed the Children has a world wide network of potential buyers and donated or discounted shipping. With your permission the product can be sold in places like the former USSR

countries, Eastern Europe or Latin America. All of the funds received will be used to support programs for children in Canada and overseas.

So everybody benefits. As well as getting a tax credit, you get rid of stuff you don't really want. Your company and employees feel good about helping a very worthy cause. And hungry kids get fed and cared for.

So call us. Usually we can come within a few days and pick up your product or you can drop it off at our warehouse in Toronto.

Great idea, eh?

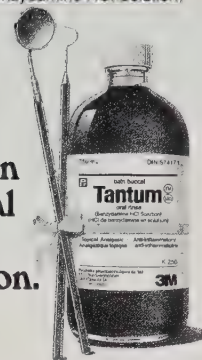
Call today: 1-800-387-1221

in Toronto 416 757-1220



Canadian Feed the Children Inc., 174 Bartley Drive, Toronto, Ontario, M4A 1E1

Oral rinse™
Tantum
(Benzzydamine HCl Solution)



Prescription relief of oral pain and inflammation.

Summary of prescribing information

THERAPEUTIC CLASSIFICATION
Topical Analgesic — Anti-Inflammatory

Action

Animal studies using the parenteral route have shown that "Tantum" Oral Rinse possesses properties of an analgesic—anti-inflammatory agent. This effect is not mediated through the pituitary-adrenal axis. Studies using the topical route have demonstrated the local anesthetic properties of benzydamine hydrochloride. In controlled studies in humans with oropharyngeal mucositis due to radiation therapy, "Tantum" Oral Rinse provides relief through reduction of pain and edema. Similar studies in patients with acute sore throat demonstrated relief from pain.

Indications

"Tantum" Oral Rinse is indicated for relief of pain in acute sore throat and for the symptomatic relief of oro-pharyngeal mucositis caused by radiation therapy.

Contraindications

"Tantum" Oral Rinse is contraindicated in subjects with a history of hypersensitivity to any of its components.

Precautions

The use of undiluted "Tantum" Oral Rinse may produce local irritation manifested by burning sensation in patients with mucosal defects. If necessary, it may be diluted (1:1) with lukewarm water. Since "Tantum" Oral Rinse is absorbed from the oral mucosa and excreted mostly unchanged in the urine, a possibility of its systemic action has to be considered in patients with renal impairment.

Use In Pregnancy

The safety of benzydamine HCl has not been established in pregnant patients. Risk to benefit ratio should be established if "Tantum" is to be used in these patients.

Use in Children

Safety and dose directions have not been established for children five years of age and younger.

Adverse Reactions

The most frequent adverse reactions reported are: local numbness (9.7%), local burning or stinging sensation (8.2%), nausea and/or vomiting (2.1%). The least frequent were reports of throat irritation, cough, dryness of the mouth associated with thirst, drowsiness and headache.

Treatment of Overdosage

There are no known cases of overdosage with benzydamine HCl gargle. Since no specific antidote for benzydamine is available, cases of excessive ingestion of the liquid should receive supportive symptomatic treatment aimed at rapid elimination of the drug.

Dosage and Administration

Acute sore throat: Gargle with 15 mL every 1 1/2 to 3 hours keeping in contact with the inflamed mucosa for at least 30 seconds. Expel from the mouth after use.

Radiation Mucositis: Use 15 mL as a gargle or rinse repeated 3-4 times a day, keeping in contact with the inflamed mucosa for at least 30 seconds and then expel from the mouth. Begin "Tantum" Oral Rinse the day prior to initial radiation therapy; continue daily during the treatment and after cessation of radiation until the desired improvement is obtained.

Availability

Tantum Oral Rinse is available in 100 and 250 mL bottles. "Tantum" Oral Rinse is a clear yellow-green liquid containing 0.15% benzydamine hydrochloride in a pleasant-tasting aqueous vehicle with 10% ethanol.

Product monograph is available on request.

References:

1. Simard-Savoie S and Forest D. *Curr Ther Res* 1978; 23(6):734-45.
2. Whiteside MW. *Curr Med Res Opin* 1982;8:188-9.
3. Wethington JF. *Clin Ther* 1985;7(5):641-6.
4. Product monograph.
5. Yankell SL. Evaluation of benzydamine HCl in patients with aphthous ulcers. *The Compendium of Continuing Education* 1981; 11(1)
6. Epstein JB. *Int J Radiation Oncology Biol Phys* 1989; 16(6):1571-5.

PAAB
CCPP

3M Pharmaceuticals
3M Canada Inc.
Post Office Box 5757
London, Ontario N6A 4T1

3M



JOURNAL

February/
Février
1995
Vol. 61
No. 2

CDA Access Ads

CDA ACCESS ADS offer guaranteed access to Canada's largest audience of dentists. To place your ad, call **Neil McGillivray** toll-free across the country at **(800) 661-5004**. In the Toronto calling area, please dial **(905) 278-6700**.

Replying to a CDA Access Box Number? Simply write to:
CDA Access Box _____,
1382 Hurontario St.,
Mississauga, Ont. L5G 3H4.
Or you may fax your reply to (905) 278-4850, noting the appropriate box number.

Offices & Practices

BRITISH COLUMBIA - Nanaimo: Exceptional opportunity/location for sale - First-class dental office in busy major shopping centre, five operatories, high new patient flow, great history and even better future expected. Located in Nanaimo, B.C., one of the fastest growing cities in Canada, with a great recreational environment on the ocean. Call (604) 756-1200 day or (604) 756-1082 evenings. (04/02)

BRITISH COLUMBIA - Trail: Established family practice in stable industrial economy with superb recreational opportunities. Prime location. Low overhead. Modern equipment. Owner retiring. Phone (604) 362-9426 (evenings). (06/13)

BRITISH COLUMBIA - Vancouver Island: Well established practice for sale. Excellent location, very busy, California of Canada. Please reply to CDA ACCESS Box # 2655. (01/02)

BRITISH COLUMBIA - Lower Mainland: Pacific flyway for sale. Profitable, well-established, health-centred, non-traditional general practice opportunity with crown and bridge emphasis. Here the famous visitors are snow geese travelling between the Arctic and South America. The municipality offers some of the best quality of life in British Columbia. Please respond with curriculum

vitae and written vision of your preferred future to CDA ACCESS Box # 2652. (12/02)

BRITISH COLUMBIA Burnaby

For sale, busy well established family practice. Low overhead, 30-40 new patients per month, owner relocating to Kelowna. Price \$170,000.
Call (604) 879-7596
or reply to
CDA ACCESS Box # 2658. (02/04)

BRITISH COLUMBIA Fraser Valley

Profitable, modern, well established practice in beautiful facility. Country living with easy access to big city amenities. \$600,000 Gross - 4 day week.
Message/Fax: (604) 852-9420
or reply to
CDA ACCESS Box # 2659. (02/04)

BRITISH COLUMBIA East Vancouver

For sale, established family/general practice. Dentist wants to retire by early 1995. Excellent patient flow. Eight-year-old practice with three operatories. \$400,000 gross with low overhead. Contact:
Bing C. Wong & Associates Ent. Ltd.
(604) 682-7561. (12/02)

FOR INFORMATION ON B.C. DENTAL PRACTICES FOR SALE CALL

Health Pro Realty Ltd.
(604) 538-7838
Suite #239 - 1959 152nd Street,
White Rock, B.C. V4A 9E3

ALBERTA - Edmonton: For sale, well-established busy general practice. Modern, attractive, bright office. Exceptionally friendly patients. Very low rent, two ops. (plus two others plumbed/wired and ready to set up).

Near West Edmonton Mall, owner retiring. Call (403) 481-0080, or (403) 486-2982 evenings, or reply to CDA ACCESS Box # 2653. (12/02)

SASKATCHEWAN

Practice for sale or Locum Required
Moderate income practice for sale, all new equipment.
Progressive surroundings.
Please reply to
CDA ACCESS Box # 2645. (11/13)

MANITOBA - South Central Region: General practice for sale. Comfortable driving distance from Winnipeg. High gross, reasonable overhead, diverse workload, Pan/ceph equipped. Please reply to CDA ACCESS Box # 2660. (02/04)

ONTARIO - Toronto: General practice for sale. North York store-front plaza, computerized, fully-equipped four ops. Over 2,000 active charts. 600K income in 1993. 40 new patients per month. Great opportunity for aggressive dentist or dental team. Please call (416) 223-1863. (12/02)

BRAMPTON - ONTARIO

630 to 4,500 sq. ft. in high demand Professional Building. Attractive rates include Leasehold Improvements and free parking. Ideal location for Dental Specialist.
Ermidio Alves, (905) 453-0114
ELFA Real Estate Inc. (02/02)

NEWFOUNDLAND Scenic West Coast Practice for sale.

Preventive-oriented family practice - high gross, low overhead. Great location - close to downtown. Great outdoor activities, close to skiing, golf course. Please reply to
CDA ACCESS Box # 2636. (09/02)

Professional Services

CHARTERED ACCOUNTANT

Let me assist you as your
Business Advisor.

Financial statements, tax planning, business and loan proposals, general business consultation. Eager to provide high quality, friendly service at reasonable rates. Call:

(416) 282-4240 for quotations. (11/02)

Positions Available/Sought

YUKON - Whitehorse: Associate required for Klondyke Dental Clinic. If you enjoy modern city amenities and the great outdoors you are welcome to join us as a general dentist associate, or in the capacity of a children's dentist. Contact Dr. Pearson at (403) 668-4618. (02/04)

BRITISH COLUMBIA - Victoria: Associate wanted with view towards a future partnership for a pedodontist. Must be caring, hard-working individual. Position available after December 1995. Your future has unlimited potential with a great lifestyle and the best climate in all of Canada. Please call (604) 744-1065 after 6 p.m. (02/02)

BRITISH COLUMBIA - Vancouver: Busy general practice seeks quality-oriented associate for full-time position. Prefer minimum three years experience, but will consider others depending on personal qualities. Please send detailed resume with cover letter describing your personal and professional goals to Fax # (604) 576-5738. (02/02)

BRITISH COLUMBIA - Prince George: Associate wanted. Looking for a motivated conscientious associate to work with owner in a large, very modern practice located in a rapidly growing university community in north central B.C. Excellent opportunity to increase a new graduate's clinical and practice management skills. For information call (604) 964-6700. (10/13)

BRITISH COLUMBIA - Nanaimo: Excellent opportunity for an associate to work as a sole dentist in a retail dental practice, experience an asset. Opportunity to buy-in starting on February 1, 1995. Located in Nanaimo B.C.

To place your

**CDA ACCESS
AD**

just call

**Neil
McGillivray**

at
(905) 278-6700

(Toronto Area)
or

(800) 661-5004.

Great growth, recreation and lifestyle on the ocean. Call (604) 756-1200 days, or (604) 756-1082 evenings.

(12/03)

BRITISH COLUMBIA - Comox: Associateships. Do you want to work in a quality Vancouver Island community? Motivated and experienced associate required for a spacious modern, well established office. Would suit individual with interest in practice management skills. Opportunity of business association in the near future for the right individual. Contact: Tel: (604) 339-4044 Business Hours; (604) 339-2342 Evenings and Weekends. (01/03)

BRITISH COLUMBIA - Victoria: ASSOCIATE OPPORTUNITY. Take over existing patient base in a very busy, large, computerized four-dentist practice. Extended hours, family practice. Must be experienced, outgoing and motivated. Position available immediately. Call Dr. Don Bays (604) 381-6433 (O), (604) 595-8050 (H). (01/02)

ACCOUNTING & TAX SERVICES FOR B.C. DENTAL PRACTICES

- Incorporations
- Buying/Selling
- Family Trusts

300 - 2000 West 12th Avenue
Vancouver, B.C. V6J 2G2
(604) 736-6581



**MCCONNELL
GALLOWAY
BOTTESELLE**

National Affiliate
Porter Héту

CERTIFIED
GENERAL
ACCOUNTANTS

ALBERTA - NORTHERN REGION

Wanted, associate for growing practice, bustling and prosperous community. Previous work experience an asset but not a requirement. One hour air time from Edmonton.

Please reply to
CDA ACCESS Box # 2656. (01/02)

ALBERTA - Lethbridge: Associate required. Seven-chair, one-doctor general practice with large focus on orthodontics requires associate immediately. Up to seven month backlog on some services. Prefer high-toned 1990-1993 graduate. Please inquire in writing to: Office Manager, Dr. L. Mark Evans, 514 5th Avenue South, Lethbridge, Alberta T1J 0T8 or fax (403) 320-6710. (12/02)

CENTRAL ALBERTA - RED DEER

Successful and well-managed practice seeks an experienced yet conservative dentist who sincerely cares about patients and is a team player.

Please contact Fran Holler at
(403) 347-8008. (02/04)

ALBERTA - Medicine Hat: Full-time associate required to start May/June 1995. Require above average academic achievement, good character, socially responsible with a deep concern and commitment for the care of others. Modern and spacious family-oriented clinic features 16 operatories and is well located in a busy and growing community. Please call Kevin at (403) 526-0777. (11/02)

ALBERTA - Calgary : Associateship sought. Part-time or full-time associateship sought by dentist with seven years experience for Calgary and vicinity (within 45 minutes). Call (306) 585-6313 or reply to CDA ACCESS Box # 2643. (10/02)

SASKATCHEWAN - Rosetown: Associate wanted. Excellent opportunity for a full-time associate to work with a well-established practice, part-time in Rosetown and part-time at a satellite practice in Eston. If you are a highly motivated dentist looking to work in a progressive environment (fully computerized, highly trained team members ...) away from the city (yet easily accessible to Saskatoon), we would like to hear from you. Buy-in potential exists for the right candidate. Please contact Dr. Glenn Riekman, Box 1690, Rosetown, SK., S0L 2V0. Phone: office (306) 882-2123 or home (306) 882-2006. (02/04)

ONTARIO - Kitchener: Locum/associate. Successful Kitchener practice is seeking a dentist for Spring/Summer 1995. Locum possibly leading to associateship. Must be personable and caring. Please reply to CDA ACCESS Box # 2657. (01/03)

ONTARIO - Haldimand-Norfolk Region: Associate needed in a well-established busy general practice. Preference given to long-term caring individual who will reside in region. A person whose interest lies first with the patient's well-being is a must. Office is up-to-date, and income potential is considerable. We are centrally located in a rural setting yet close to all amenities, 30 minute drive from Hamilton. Please call (519) 426-2273 and ask to speak with Cathy, evenings call (519) 582-2914. (12/02)

CHIEF OF DENTISTRY

Baycrest Centre for Geriatric Care provides programs and services, both on-site and in the community, to more than 2,000 older people daily. Through our client care, research and education programs, and emphasis on healthier aging, we work to enrich the quality of life for an aging population.

An exciting and challenging opportunity exists for a Chief of Dentistry reporting to the Vice-President, Medical Services. In addition, he or she liaises with the Vice-President, Research and external bodies to implement and administer research programs.

The Chief of Dentistry is responsible for the professional activity, utilization of services, quality of care and the promotion of the client care, educational and research programs. The Chief of Dentistry, cross-appointed to the Faculty of Dentistry, works collaboratively with the Dean of the Faculty of Dentistry.

The ideal candidate will have a demonstrated background in clinical dentistry and a proven academic track record. In addition, the individual will have strong management capabilities and lead the further development of a clinical/academic department of geriatric dentistry. Qualified applicants are invited to submit their resumes and the names of three (3) references by March 15, 1995 to:

Office of the President
Baycrest Centre for Geriatric Care
3560 Bathurst Street
North York, Ontario
M6A 2E1

(02/02)

*At last you have
a better way
to access
the dental
marketplace.*

*To place your
CDA ACCESS AD*

*Call
Neil
McGillivray*

*at
(800) 661-5004*

*in Toronto
call
(905) 278-6700.*

Head, Division of Periodontics Faculty of Dentistry Dalhousie University

Dalhousie University, Faculty of Dentistry invites applications for a full-time tenure track position of Head, Division of Periodontics, effective July 1995. Preference will be given to applicants with graduate training in Periodontics and eligibility for licensure in Nova Scotia. Demonstrated ability in administration, teaching and scholarship is expected. Extramural practice privileges are available. Dalhousie University is an Employment Equity/Affirmative Action Employer. The University encourages applications from qualified women, aboriginal peoples, visible minorities and persons with disabilities. In accordance with Canadian immigration requirements, preference will be given to Canadian citizens and permanent residents.

Applications will be received until April 1, 1995. Applicants should submit a letter of application with Curriculum Vitae and the names and addresses of three referees to:

Dr. R.M. MacDonald
Chair, Department of Restorative Dentistry
Faculty of Dentistry
Dalhousie University
Halifax, Nova Scotia
B3H 3J5 Canada

(02/02)

FACULTY POSITION AVAILABLE
CALIFORNIA - University of California, San Francisco
Division of Pediatric Dentistry

A position is available for an entry level full-time faculty member. The appointment will be made at the rank of Assistant Clinical Professor without tenure option.

Responsibilities will include teaching, both in the doctoral and postdoctoral programs. A strong clinical background is essential with demonstrated experience and ability in clinical teaching, lecturing and conducting seminars. Applicants should also be willing to participate in clinical research.

The appointment will include faculty practice in the intramural setting. Applicants' qualifications should include licensure or eligibility for licensure by the California Board of Dental Examiners, American Board of Pediatric Dentistry eligibility or diplomate status and a strong background of dental experience in the hospital setting.

Applicants should include a curriculum vitae plus the names and addresses of three persons, well acquainted with the candidate's educational and professional background, from whom references may be solicited.

Applications and additional inquiries should be addressed to:

Dr. Raymond L. Braham,
Chair-Pediatric Dentistry Search Committee, School of Dentistry,
Box 0438,
University of California,
San Francisco, CA 94143

The University of California is an equal opportunity employer. Women and minorities are encouraged to apply.

(02/02)

ONTARIO - Southwest Region:

Periodontist and endodontist required for a multi-specialty practice. Part-time initially with possibility of developing into a full-time partnership. Reply to CDA ACCESS Box # 2641. (10/02)

ONTARIO - Sudbury:

Seeking an experienced associate for my busy family practice. Expanded office hours will include evenings and Saturdays. For more information please contact Russell Knight c/o EXPEDIENT CONSULTANTS (905) 415-9767.

(02/13)

OTTAWA, ONTARIO
Associate Wanted

We are seeking an enthusiastic dentist to join our progressive Ottawa practice as an associate (with option to buy in).

We provide the full range of dental services in an excellent, comfortable, modern, computerized environment of personalized care. Bilingualism preferred. If you are interested, please call (613) 230-7475. (02/04)

Meetings & Announcements

BOOTH #1002
MARCH 3RD & 4TH, 1995
B.C. Meeting
Vancouver Convention Centre

Please come by and see our line of dental instruments!!

*Cone socket screw in tips,
double and scalers, curettes,
explorers, carvers, etc.*



Lambert

Dental Instrument Manufacturer

P.O. Box 690326 Stockton • CA 95269

(209) 931-6207 Fax (209) 931- 6221

U.S.A. & Canada 1-800-327-7108.

Equipment Sales, Service

SASKATCHEWAN: Equipment wanted. Wanted used Axial-Tome 60. Call (306) 463-4488. (12/02)

NEWFOUNDLAND - Mount Pearl:

Need a computer? Take over my lease (2 1/2 yrs. left on a 5 year lease at \$588/ month) Exan 486-33 CPU, 1.2 Mb floppy, 4 Mb Ram, 10 serial and 1 parallel port, 212 Mb hard drive, 120 Mb Streamer, XENIX Operator, 2400 baud external modem, VGA color monitor, B/W monitor, HP IIIP laser printer, and Roland dot matrix printer, software licence under Exan Dentex. Call (709) 747-3041 Rob or Gillian.

(12/02)

NOVA SCOTIA - Halifax:

Dental instruments for sale. All you need to start up your practice. Includes pulp vitality tester, impression trays, forceps, etc., almost new! Will sell for \$3,500, obo, replacement cost \$6,500 plus PST. Must go as package, please call (902) 445-4171 or (902) 443-8888 Dr. O. Sterling. (11/02)

PRICE BREAKTHRU

\$90.00 Per unit*
semi-precious metal incl.

A five-year quality and satisfaction guarantee.
Canadian Qualified Technicians will manufacture your ceramic crown and bridge prescription to perfection.

Ceko Dental Laboratory
208, 2705 Centre Street, N.W.
Calgary, Alberta T2E 2V5
Tel: (403) 276-3455

*Conditions:

1. Regular price \$125.00 per unit reduced to \$90.00 when payment enclosed with Rx.
2. Semi-precious metal (6% gold).
3. We pay shipping from our Lab. to your door.
4. All Rx. shipped out within six days of receipt.
We use *Priority overnight service.* (11/02)

*Selling a
practice?*

*Leasing
an office?*

*Buying
Equipment?*

*Renting your
vacation property?*

*To place your
CDA ACCESS AD*

just call

**Neil
McGillivray**

*Toll-free at
(800) 661-5004*

*In Toronto,
just dial
(905) 278-6700.*

Miscellaneous

CONDOS FOR SALE

Costa Rica, Central America

Canadian physician is building 16 condo
apartments at **Jaco Beach, Costa Rica**,
100 feet from the Pacific Ocean.

One bedroom units \$69,900 to \$74,900
U.S.A. funds. Limited mortgage available.

Ecotourism, contact R. Aubin MD for a
complimentary brochure. **Phone**
(613) 526-1952, Fax (613) 526-0990. (01/03)

DANSEREAU HEALTH PRODUCTS CLINIC II

California Chair

All electric, auto return. Reversible cushions, choice of 30 colors.

Delivery System

3-Handpiece automatic foot control, air lock arm, stainless steel tray,

3-Way syringe, X-ray view box.

Assistants Package

HVE, saliva ejector, 3-way syringe, cuspidor, manual cup filler, quick
disconnect, J-box with controls for easy installation.

Light

Chair mounted light, post plate and cup.

Retail \$5,325. With Cash Discount \$3,995.

We accept Visa & MasterCard.

All prices FOB factory Anaheim.

Manufacturer direct sales for 31 years.

DANSEREAU HEALTH PRODUCTS

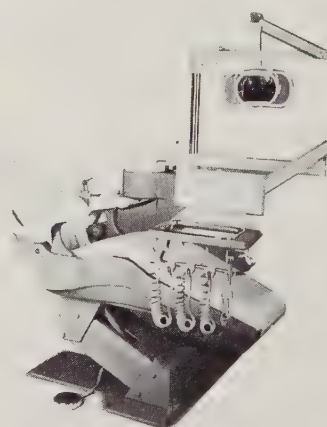
559 S. Rose Street
Anaheim, CA 92805

(714) 776-5357 FAX (714) 776-4652

(800) 423-5657 (USA & Canada)

DANSEREAU HEALTH PRODUCTS CANADA

3412 Oxford Street, Port Coquitlam, BC
(604) 941-6799, (800) 561-3177 (Canada)



ADVERTISERS' INDEX

A-dec	85
Ash Temple	IFC
Bisco Dental	104
CDA Communiqué	141
CDA Dental Health Month	154
CDA Leasing	133
CDA Membership	142
CDAnet Plus	153
CDA RSP	96
CDA Surviving and Thriving	145, 146
CDA Taking Care of Business	135, 136
CDSPI	86
Dentsply	OBC
Hoechst-Roussel	90
Ivoclar Vivadent	92
Ivoclar Williams	103
3M	161, IBC
Maxium Computers	100
Metasy's Dental	82
Premier Dental	80
Procter & Gamble	110, 111, 158
Sheppard Management	94

Tantum.

Your partner for fast relief of oral pain and inflammation.¹⁻³

Tantum Oral Rinse is a partner you can rely on to give many of your patients prescription relief of oral pain and inflammation.⁴ Tantum begins working on contact,¹⁻³ offering rapid relief that lasts for up to 3 hours.⁴ Its topical application is designed to enhance patient compliance. Add clinically proven efficacy,¹⁻⁶ and you have the full picture of why Tantum may be an ideal partner for your practice.

P **Tantum**TM
Oral rinse
(Benzydamine HCl Solution)



Prescription relief of oral pain and inflammation.

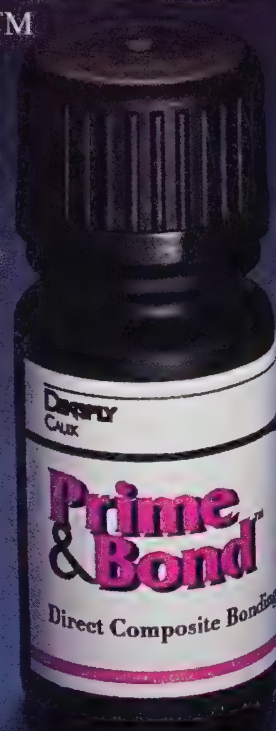
Innovation working for youTM

3M Pharmaceuticals
3M Canada Inc.
Post Office Box 5757
London, Ontario N6A 4T1



Introducing the One Bottle Bond™

NEW!



Two one-year clinical studies show 98% retention.¹

New Prime & Bond is the direct-placement, composite bonding agent you can believe in. No more searching through "chemistry kit" systems for the right components. Now, there's only one.

New Prime & Bond bonding agent offers superior strength for a variety of techniques.² It also creates a uniform hybrid zone with the total etch technique.³ And for your most frequent bonding procedure, direct placement bonding, it has demonstrated 98% retention in two controlled clinical studies.

DENTIN BOND STRENGTHS²

Dentin Pretreatments	Dry	Moist	Total Etch
Dr. Barkmeier	21.3 MPa	not tested	25.3 MPa
Dr. Powers	20.2 MPa	22.6 MPa	24.0 MPa

To try new Prime & Bond, the one-bottle bonding agent, call your authorized DENTSPLY Canada distributor, or your (Caulk) Dentist Division representative at 1-800-263-1437.

Prime & Bond
DIRECT COMPOSITE BONDING AGENT
Light Years Ahead.

(Caulk) Dentist Division

DENTSPLY
CANADA

©1994 DENTSPLY International. All Rights Reserved.

¹ N.M. Jedyndlewicz, N. Martin, J.M. Fletcher, "Clinical Investigation of the Restorative Material K 71 for Cervical Lesions" (University of Liverpool, 1994); R.J. Elderton et al., "Clinical Investigation of K 71 for Cervical Lesions" (University of Bristol, 1994). ² W. Barkmeier, D.D.S., M.S., data on file; J. Powers, Ph.D., data on file. ³ John Garimberti, Ph.D., B.D.S., I.D.S., R.C.S., data on file.

JOURNAL

of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

Dont

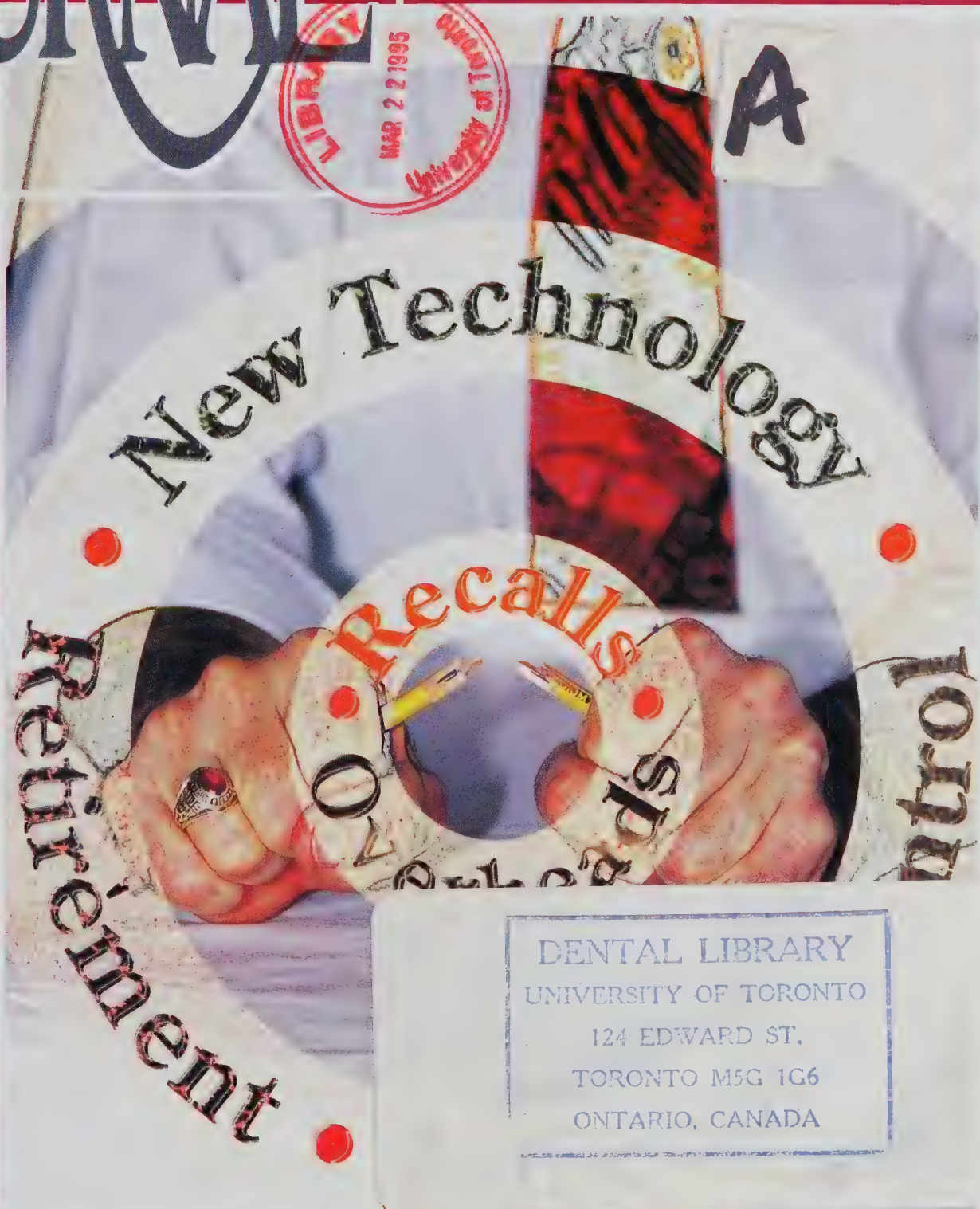
Vol. 61 No. 3

MARCH
MARS

1995

If undeliverable
to Addressee
RETURN TO SENDER
Return Postage
Guaranteed

Si non livrable
au destinataire
RETOURNER A
L'EXPÉDITEUR
Port Payé



UNIVERSITY OF TORONTO
LIBRARY CAN
SERIALS DEPARTMENT
TORONTO, ON
M5G 1A5

XX 15 00

Practice Management
La gestion du cabinet

Turn a GANG of *KILLERS* loose in YOUR OFFICE!

Microbex has a whole range of microbial control products and services to cover your every need.

Our full-spectrum Ethanol solution disinfects instruments or surfaces in one minute – our tests prove it! This increases productivity while accelerating patient turn-around.

Our innovations in product and technique include unique dispensing systems and sterility assurance programs.

A new fully equipped Research, Quality Control and Microbiological Laboratory offers a full range of services including

computerized spore testing for autoclaves, chemiclaves and dry heat sterilizers.

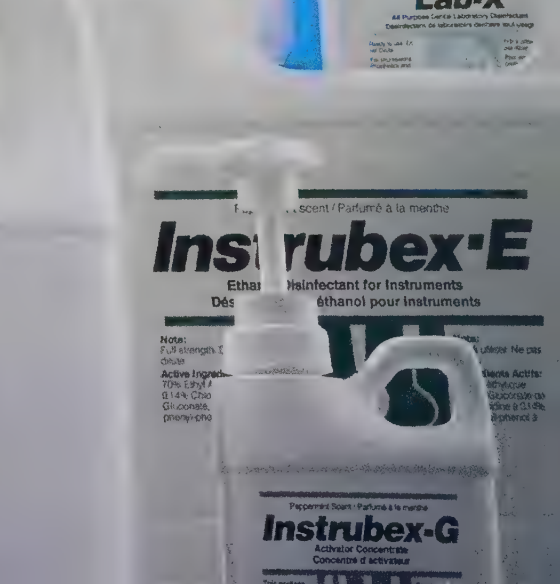
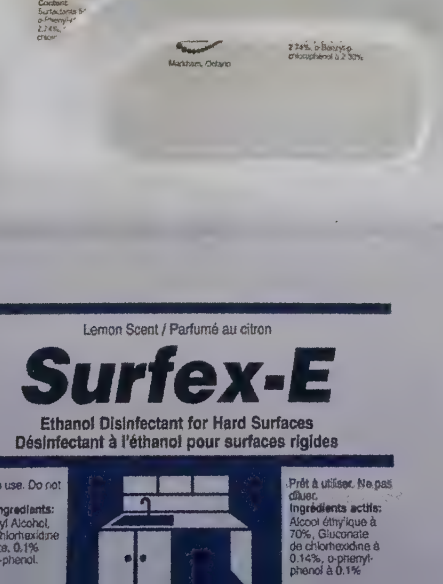
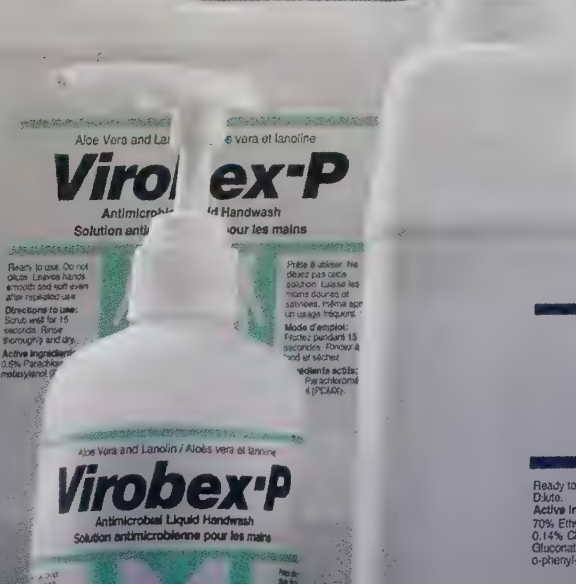
These and many other reasons make Microbex the Canadian leader in asepsis products today.

For more information on the complete line of Microbex products, call 416-477-5442 or your Ash Temple branch.

MICROBEX
MICROBIAL CONTROL
CONTRÔLE MICROBIOLOGIQUE

Leaders in Microbial Control
67 Lesmill Road
Don Mills, Ontario M3B 2T8

An Ash Temple Company-
Ash Temple Limited, Servident,
A-Tech, Microbex Aseptics,
Acrylium



CDA MISSION STATEMENT



“The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.”

SPECIALTY EDITORS

Endodontics

Dr. W. H. (Bill) Christie

Oral and Maxillofacial Surgery

Dr. David S. Precious

Oral Pathology

Dr. James H. P. Main

Orthodontics

Dr. Kenneth E. Glover

Pediatric Dentistry

Dr. Victor Legault

Periodontics

Dr. James E. (Jim) Stakiw

Prosthodontics

Dr. Michael MacEntee

Public Health

Dr. Donald Lewis

Radiology

Dr. Robert E. Wood

CONSULTING EDITORS

Anesthesiology

Dr. Earle Young

Dental Materials

Dr. Peter T. Williams

Medicine

Dr. George K.B. Sandor

Pharmacology

Ms. Helen Grad

Forensic Dentistry

Dr. Robert Dorion

Infection Control

Dr. Joel Epstein

Practice Management

Dr. Bob Brandon

Cosmetic Dentistry

Dr. Ken Neuman

Nutrition

Mrs. Nina Burgess

Canadian Dental Hygienists Association

Ms. Carol Matheson

Worobey

Canadian Dental Assistants Association

Ms. Charlotte Peer-Miller

CDA EXECUTIVE COUNCIL

President

Dr. Bryun Sigfstead
Edmonton, Alberta

President-Elect

Dr. James Brookfield
Kirkland Lake, Ontario

Vice-President

Dr. Barry Dolman
Montreal, Quebec

Dr. John Diggins
Vancouver, B.C.

Dr. Toby Gushue
St. John's, Nfld.

Dr. Richard D. Sandilands
Edmonton, Alberta

Dr. David Somer
Hamilton, Ontario

Dr. Tom Breneman
Brandon, Manitoba

Dr. Louis Dubé
Sherbrooke, Quebec

CDA STAFF

EXECUTIVE

DIRECTOR'S OFFICE

Executive Director

A. Jardine Neilson

CORPORATE AFFAIRS

Manager, Corporate Affairs
Sandra Davis

Coordinator,
Board and Executive
Suzanne Burton

PROFESSIONAL SERVICES

Director, Education and Accreditation/Professional Services

Brian Henderson

Associate Director,
Education and Accreditation
Susan Matheson

Coordinator, Education and Accreditation
Gay MacQuarrie

Coordinator, DAT
Danuta Askew

Coordinator, Purchaser Information Program, CDAnet
Patricia Drake

COMMUNICATIONS

Director of Communications
Linda Teteruck

Librarian

Martha Vaughan

Manager, Membership Services

Carol Anne Deneka

Manager, Information Services

Lisa Burke

ADMINISTRATION

Director of Administration
Joel R. Neal

Manager, Human Resources

Tefiro Kyeyune

Secretary, Membership

Lydia Allison

JOURNAL

Published monthly by the Canadian Dental Association at 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6. Copyright 1982 by the Canadian Dental Association. Authorized as Second Class Mail, Registration Number 5384. Postage paid at Ottawa, Ont.

Subscriptions: All subscriptions payable in advance in Canadian funds. In Canada — \$48 (+ GST); United States — \$53; all other — \$58.

Subscriptions are for 12 issues, not necessarily conforming with the calendar year.

Notice of change of address should be received before the 10th of the month, to become effective the following month.

Member:

American Dental Editors' Association
Canadian Circulations Audit Board

Call CDA for information and assistance toll-free at:

1-800-267-6354

CDA Fax No.: 1-613-523-7736

All matters pertaining to advertising should be directed to:

Keith Health Care Communications
1382 Hurontario Street
Mississauga, Ont.
L5G 3H4

Attn : Ms. Janet Duffield,
Sales Representative, or,
Mr. Neil McGillivray, CDA Access Representative

Tel. : (905) 278-6700

Fax : (905) 278-4850

JOURNAL

March/
Mars
1995
Vol. 61
No. 3



THE MOST ACCURATE IMPRESSIONS... With Just A Touch!

ESPE PENTAMIX® will revolutionize your impression mixing.

- ◆ Saves time, providing you with a void-free mix every time.
- ◆ Easy to use. You even have extended working time.
- ◆ Ideal for the asepsis oriented practice, eliminates potential cross contamination.



*The tray and syringe are loaded in seconds.
There is virtually no waste and no clean up.*

New!
ESPE PENTAMIX®
AUTOMATIC MIXER FOR IMPREGUM®
Send for a free video.

*Pentamix is a registered trademark of ESPE Dental-Medizin GmbH & Co. KG, Germany
*Impregum is a registered trademark of Premier Dental Products Co.

ESPE Canada • 480 Hood Road, Unit 3 • Markham, Ontario L3R 9Z3 • 800-465-8455

JOURNAL

CANADIAN DENTAL ASSOCIATION/
L'ASSOCIATION DENTAIRE CANADIENNE

MARCH/MARS 1995
VOL. 61, NO. 3

Executive Director
A. Jardine Neilson

Editor
Dr. P. Ralph Crawford

Managing Editor
Terence Davis

Assistant Editor, Writer
Antonia Papadakou

*Coordinator, production
& desktop services*
Michelle Walters

Circulation Secretary
Rachel Galipeau

Scientific Editor (English)
Dr. Robert S. Turnbull

Scientific Editor (French)
Dr. Pierre C. Desautels

All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association. The editor reserves the right to edit all copy submitted to the *Journal*. Publication of an advertisement does not necessarily imply that the Canadian Dental Association agrees with or supports the claims therein.

The *Journal of the Canadian Dental Association* is published in both official languages, except scientific articles, which are published in the language in which they are received. Readers may request the *Journal* in the language of their choice.

ISSN 0709 8936
PRINTED IN CANADA



193 Immediate Implant Post-Surgical Complications

C.G. Ibbott, DMD, FRCD(C)
R.D. Oles, DDS, MS

199 Effectiveness of a Topical Antifungal Regimen for the Treatment of Oral Candidiasis in Older, Chronically Ill, Institutionalized, Adults

David W. Banting, DDS, PhD
Janice G. McMin

207 Submerged Versus Non-Submerged Dental Implants: A Comparison

S. Saba, B.Sc., DDS, Cert. Pros.



227 How Successful Is Your Dental Practice? — 10 Performance Criteria

H. Jack Stockton, DMD, CFP, MBA

233 Consent — Is It Informed and Valid?

Wesley J. Dunn, DDS

237 Suicide — No Margin For Error

Robert S. Unger, PhD, C.Psych.

240 Designers and Office Design

Harold Crittenden, LID, IDA, IDC

246 "Team Dynamics 2000": Patient Care and Practice Management

Debra Engelhardt

253 The Computerized Point of No Return

Barry Freyberg, DDS

255 Patient Education: The Key To a Successful Practice In Turbulent Times

Jim Gommerman

DEPARTMENTS



174 Meetings and Courses

179 Editorial

181 President's Column

183 Letters To the Editor

185 News Update

189 Let's Talk

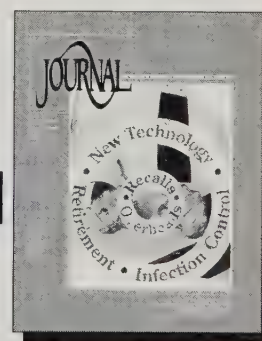
192 Book Reviews

211 CDA Annual Dental Meeting

223 Practice Management and Success

261 CDA Access Ads

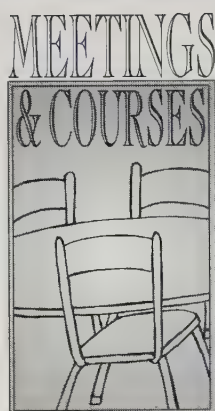
266 Advertisers' Index



Cover: Stress (Design by Mike Lord, Photograph Courtesy of Dr. Walter Pelech).



March/
Mars
1995
Vol. 61
No. 3



INTERNATIONAL



May 20-24

European Begg Society of Orthodontics, 17th Congress to be held in Chester, U.K. For information contact Geoff Budd, Brookside, 35 Warwick Park, Tunbridge Wells, Kent. TN2 5TA U.K.

June 1-3

BDA Annual Conference "Success in Practice" to be held in Birmingham, England. For more information contact: Linda Wallace, British Dental Association, 64 Wimpole St., London W1M 8AL, England. Tel: (71) 935 0875 or Fax: (71) 487 5232.

June 12-15

1995 Roentgen Centenary Congress and Historical Exhibition to be held in Birmingham, U.K. For more information contact: Miss V. Whitehead, Conference Office, British Institute of Radiology, 36 Portland Place, London W1N 4AT, U.K.

June 12-23

An intensive course in Oral Pathology (including most aspects of Oral Medicine) will be given in Copenhagen on the premises of the Danish Dental Association. The course consists of 40 lectures and 30 hours at the microscope and will be conducted in English. Registration before April 1, 1995. For further information: Secretary Anne Grethe Ingversen, Department of Oral Pa-

thology, School of Dentistry, University of Copenhagen, 20 Nørre Allé, KD-2200 Copenhagen N, Denmark. Tel.: +45 35326721.

June 28 - July 1

Third Endodontic World Congress sponsored by the International Federation of Endodontic Associations and organized by the Società Italiana di Endodonzia will be held in Rome, Italy. For more information contact IFAE - SIE Viale Ippocrate, 97 - 00161, Roma, Italia. Tel.: 39 6 4469955 or Fax: 39 6 4457464.

June 28 - July 1

International Association for Dental Research — 73rd General Session and Exhibition to be held in Singapore. For more information contact: E. Gwynn Breckenridge, Director of Scientific Meetings, 1111 Fourteenth Street N.W., Suite 1000, Washington, D.C. 20005, U.S.A. Tel: (202) 898-1050 or Fax: (202) 789-1033.

June 29 - July 3

XII International Congress on Oral & Maxillofacial Surgery to be held in Budapest, Hungary. For more information contact: Prof. G. Szabo, Dept. of Oral & Maxillofacial Surgery, Semmelweis University of Medicine, H-Budapest VII, Maria U. 52, Hungary.

August 23-26

XV World Congress — International Congress of Oral Implantologists to be held in San Francisco, Calif. For more information contact: R. Craig Johnson, 248 Lorraine Ave., Upper Montclair, N.J. 07043, U.S.A. Tel.: (201) 783-6300 or Fax: (201) 783-1175.

October 31 - November 4

Centenary Congress — 28th International Dental Meeting to be held in Buenos Aires, Argentina and sponsored by the Asociación Odontológica Argentina. For more information contact: Dr. Guillermo Pisarenko, president, Junin 959, (1113) Buenos Aires, Argentina. Tel: (1) 961-6141 or Fax: (1) 961-1110.

November 15-17

Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00 or Fax: (8) 662 58 42.

CANADA



April 1

Clinical Pharmacology Update presented by Dr. Rebecca Yacobi. Location: Chatham, Ont. For further information contact: The Ontario Dental Association, Professional Development, 4 New St., Toronto, Ont. M5R 1P6. Phone-in Registrations: 1-800-387-1393 ext. 304 or Fax: (416) 922-9005.

April 1

Fixed Prosthodontics (Lecture Only) presented by Dr. Bruce Glazer. Location: Renfrew, Ont. For further information contact: The Ontario Dental Association, Professional Development, 4 New St., Toronto, Ont. M5R 1P6. Phone-in Registrations: 1-800-387-1393 ext. 304 or Fax: (416) 922-9005.

April 1-7

Academy of General Dentistry, British Columbia Chapter's Continuing Education Conference to be held in Whistler, B.C. For information call 1-800-933-1339 or Fax (604) 576-5738.

April 2

TMJ Splint Workshop presented by Dr. John D. Marotta. Location: London, Ont. For further information contact: The Ontario Dental Association, Professional Development, 4 New St., Toronto, Ont. M5R 1P6. Phone-in Registrations: 1-800-387-1393 ext. 304 or Fax: (416) 922-9005.

JOURNAL

March/
Mars
1995
Vol. 61
No. 3

April 7-8

Southern Ontario Surgical Orthodontic Study Group meeting in Windsor, Ont. For details contact Dr. Jeff Berger. Tel.: (519) 258-2632 or Fax: (519) 258-2637.

April 8

Orofacial Pain: A Diagnostic Dilemma presented by Dr. Dale Miles. Location: Ottawa, Ont. For further information contact: The Ontario Dental Association, Professional Development, 4 New St., Toronto, Ont. M5R 1P6. Phone-in Registrations: 1-800-387-1393 ext. 304 or Fax: (416) 922-9005.

April 22

Hot Topics in Restorative Dentistry. With Dr. Richard Price. He will present the latest information and review bonded amalgams, the new dentin bonding systems, new materials to restore Class V lesions, impression materials, and home bleaching.

April 26-30

42nd Annual Meeting of the Canadian Society of Forensic Science. For information contact: Dr. Joel Mayer, Centre of Forensic Sciences, 25 Grosvenor St., Toronto, Ont. M7A 2G8. Tel: (416) 314-3159 or Fax: (416) 314-3225.

April 28

Dental Nutrition Course to be held in Thornhill/Markham, Ont. This six-hour continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ont.) 1-800-937-6878.

April 29

Oral Surgery presented by Dr. Stephen Fitch. Location: Etobicoke, Ont. For further information contact: The Ontario Dental Association, Professional Development, 4 New St., Toronto, Ont. M5R 1P6. Phone-in Registrations: 1-800-387-1393 ext. 304 or Fax: (416) 922-9005.

May 4, 5 and 12

Dental Nutrition Course to be held in Vancouver, B.C., London, Ont., Victoria, B.C. and Toronto, Ont. This six-hour continuing education

program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ont.) 1-800-937-6878.

May 5

Current Concepts in Emergency Pain and Anxiety Management presented by Dr. Michael Saso. Location: Windsor, Ont. For further information contact: The Ontario Dental Association, Professional Development, 4 New St., Toronto, Ont. M5R 1P6. Phone-in Registrations: 1-800-387-1393 ext. 304 or Fax: (416) 922-9005.

May 12

5T5 40th Gala Reunion Dinner to be held at the Crown Plaza Hotel Convention Center. Reception at 6:00 p.m. and Dinner at 7:00 p.m. For further information and reservations contact Dr. Gordon Marshall 316-200 St. Clair Ave. West, Toronto, Ont. M4V 1R1 Tel.: (416) 923-1733.

May 13

Maxillary Complete Dentures vs Natural Dentition/Anatome — "Anatomy of a Smile." With Dr. Robert Brygider. This presentation will explore some of the resultant problems and pathologies associated with the clinical conditions and will seek to offer modifications to the treatment process. For more information contact: Continuing Dental Education, Faculty of Dentistry, Dalhousie University. Halifax, Nova Scotia B3H 3J5. Tel: (902) 494-1674 or Fax: (902) 494-2527.

June 8

Dental Nutrition Course to be held in Burnaby, B.C. This six-hour continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ont.) 1-800-937-6878.

June 9

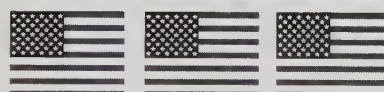
Participation Course — Advanced Endodontic Technique. This hands-on course is presented by Dr. Shimon Friedmand and Dr. Wayne Pulver, with the participation of endodontic department staff, post-graduate residents and invited guests. For more information contact: Continuing Dental Education

Office, Faculty of Dentistry, University of Toronto. 124 Edward St., Toronto, Ont. M5G 1G6 Tel: (416) 979-4902 ext. 4503 or 4590 or Fax: (416) 979-4941.

October 20-21

Southern Ontario Surgical Orthodontic Study Group Meeting to be held in Windsor, Ont. For details contact Dr. Jeff Berger at (519) 258-2632 or Fax: (519) 258-2637.

U.S.A.



April 28

Endodontic Microsurgery — The State of the Art. This course is presented by Dr. Joel Edelson and the endodontic department staff, with the participation of Dr. Syngcuk Kim, chairman of the endodontic department at the University of Pennsylvania School of Dental Medicine.

May 3-8

American Academy of Cosmetic Dentistry, 11th Annual Scientific Session to be held in Orlando, Fla. at the Hyatt Regency Grand Cypress Resort. For more information contact: AACD Executive Office at 1-800-543-9220 or write to: AACD, 270 Corporate Dr., Madison, Wis. 53714, U.S.A.

June 8-11

5th International Symposium on Periodontics and Restorative Dentistry to be held in Boston, Mass. For more information contact: Quintessence Publishing Co. Inc., 551 North Kimberly Dr., Carol Stream, Ill. 60188. Fax: (708) 682-3288.

September 15-16

The American Dental Association, Michigan Dental Association and West Michigan Dental Society are proud to celebrate during 1995 the **50th Anniversary of Community Water Fluoridation in the United States.** An international symposium on community water fluoridation will be held at the Van Audel Center in Grand Rapids, Michigan. For



more information contact: Dr. Arnold Morawa or Ms. Debbie Montague, University of Michigan School of Dentistry, 1011 N. University Ave., Ann Arbor, Michigan 48109-1078. Tel: (313) 764-6856 or Fax: (313) 936-3065.

October 4-6

58th Annual Meeting of The American Association of Public Health Dentistry — Call for Abstracts. The AAPHD is inviting papers on a broad range of dental public health topics for presentation at annual meeting. The theme of this year's meeting is "Oral Health: The Primary Care and Prevention Model." Deadline for submission is May 1, 1995. For further information contact AAPHD National office, 10619 Jousting Lane, Richmond, Va. 23235-2828. Tel: (804) 272-8344 or Fax: (804) 272-0802.

October 7-11

136th Annual Session of the American Dental Association to be held in Las Vegas, Nev. For more information contact: American Dental Association, 211 E. Chicago Ave., Chicago, Ill., 60611, U.S.A. Tel.: (312) 440-2658 or Fax: (312) 440-2707.

November 27-28

American Board of Oral and Maxillofacial Radiology 1995 — Certifying Examination. Applica-

tions must be submitted by May 15, 1995. For further information please contact Dr. Curtis Lundeen, School of Dentistry — Oral Radiology, Oregon Health Sciences University, 611 S.W. Campus Dr., Portland, Ore. 97201-3097. Tel: (503) 494-8930.

December 25 - January 1

Alpha Omega International Dental Fraternity — Annual Convention to be held in Tarpon Springs, Fla. For more information contact Stephanie Block, executive director, 206-1314 Bedford Ave., Baltimore, Md., 21208 U.S.A., (410) 602-3300 or 1-800-677-8468.

CDA & PROVINCIAL MEETINGS



April 7-8

Interim Meeting of the CDA Board of Governors to be held in Ottawa, Ont. For information contact: Suzanne Burton, 1-800-267-6354.

May 11-13

Newfoundland Dental Association Meeting to be held in St. John's, Nfld. (709) 579-2362.

May 11-13

ODA Annual Spring Meeting to be held in Toronto, Ont. (416) 922-3900 ext. 346.

May 25-28

Alberta Dental Association Annual Meeting to be held in Jasper, Alta. Contact: Dr. Dave Scott (403) 492-2014.

May 26-27

New Brunswick Dental Society Annual Meeting to be held in Moncton, N.B. (506) 452-8575.

May 27-31

Les Journées dentaires du Québec to be held in Montréal, Qué. Contact: Nicole Pagé or Ginette Boutin (514) 875-8511 Fax: (514) 875-1561.

May 30

24^e Congrès annuel de l'Ordre des Dentistes du Québec to be held in Montréal, Qué. (514) 875-8511.

June 9-10

Nova Scotia Dental Association Annual Meeting to be held in Digby, N.S. Contact: Mr. Steve Jen-nex (902) 420-0088.

HANDLES LIKE FLOSS FOR A "SMOOTH AS SILK" FINISH.

COMPO-STRIP®

HAND-HELD DIAMOND FINISHING STRIPS

**PREMIER®
COMPO-STRIP
TRIAL PACK**

ONLY \$13.99

SUGGESTED RETAIL \$27.95

EACH TRIAL PACK CONTAINS AN ASSORTMENT OF SIX STRIPS.

TWO WIDTHS: 100 = 2.5MM, 150 = 3.75MM

TWO EACH OF THREE GRITS: 60 MICRON, 45 MICRON & 20 MICRON.

LIMITED OFFER - ASSORTED PACK ONLY.

- UNIQUE DIAMOND CONSTRUCTION
- RAPID CUTTING & LONG LASTING
- THREE GRITS FOR OPTIMAL PERFORMANCE
- SAFE SIDED TO PROTECT ADJACENT TEETH
- SATISFACTION GUARANTEED BY PREMIER®



® COMPO-STRIP IS A REGISTERED TRADEMARK OF ABRASIVE TECHNOLOGY, INC.
® PREMIER IS A REGISTERED TRADEMARK OF PREMIER DENTAL PRODUCTS CO.

PREMIER DENTAL (CANADA), INC. • 480 HOOD ROAD, UNIT 3 • MARKHAM, ONT. L3R 9Z3 • 800-465-8455



**HURRY! OFFER EXPIRES 4/30/95.
AVAILABLE THROUGH AUTHORIZED PARTICIPATING DEALERS.**

FINALLY THERE'S A REALLY EFFECTIVE SOLUTION FOR SENSITIVE TEETH!



NEW SENSODYNE[®] DESENSITIZING SOLUTION.

**Stops pain fast
in the office.**

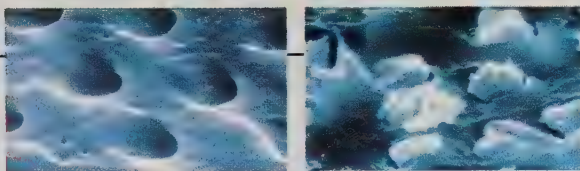
New Sensodyne Desensitizing Solution is the fast, easy, really effective way to treat sensitive teeth right at chairside. A single application takes only 60 seconds, provides relief in minutes and lasts for months.

**ON-THE-SPOT
RELIEF FOR
SENSITIVE
TEETH.**

**Continues relief
at home.**

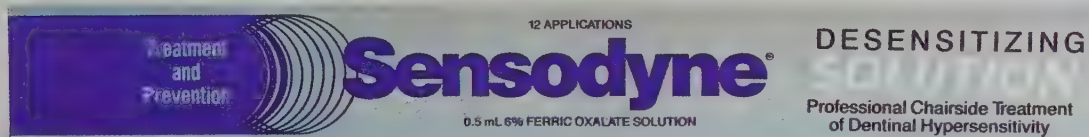
Recommend regular brushing with Sensodyne-F – the most trusted home treatment for sensitive teeth. Sensodyne Desensitizing Solution and Fluoride Toothpaste have complementary modes of action that enhance and prolong relief.

Before Treatment



After Treatment
Ferric Oxalate* obturates
open dentinal tubules.

In the office and at home Sensodyne[®]



Complete care for sensitive teeth.

*See your Block Drug rep for clinicals.

1-800-268-5747

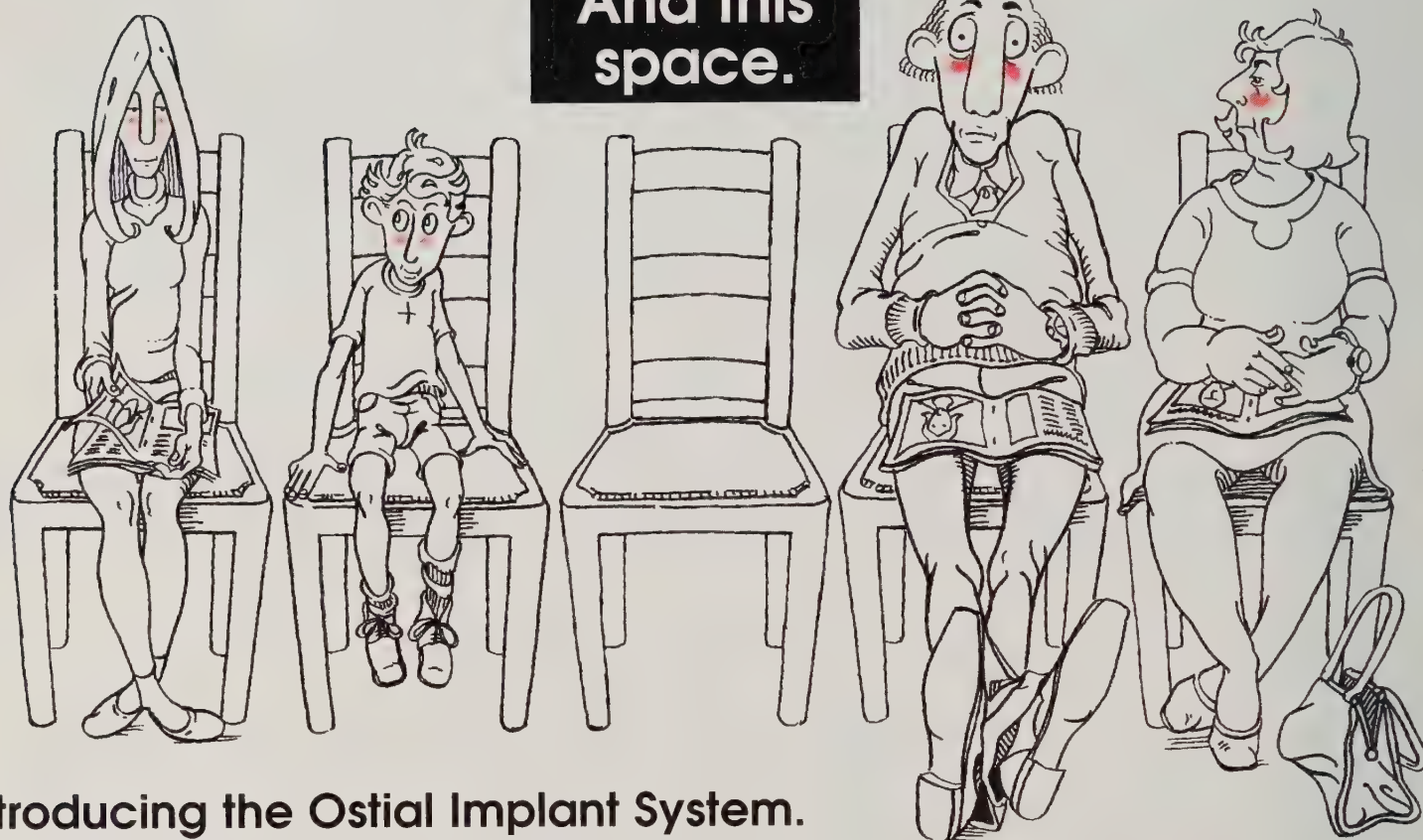
B BLOCK DRUG COMPANY (CANADA) LTD.
7600 Danbro Cres., Mississauga, Ontario L5N 6L6



At last, an affordable, uncomplicated implant system to help you fill this space.



And this
space.



Introducing the Ostial Implant System.

Hoechst-Roussel Canada is pleased to introduce Ostial, an affordable, innovative new implant system.

The Ostial Implant has a conical shape for optimum load distribution and a coarse thread design for ease of placement.

Ostial was developed here in Canada and its design is patented.* Training courses will be offered in selected centres and will qualify for Continuing Education credit points.**

For more information, call Michiel Verburg, Product Manager, at 1-800-363-1871 ext.3712 or contact your Hoechst-Roussel representative.

Ostial *Simple.
Affordable.
Innovative.*

Hoechst-Roussel Canada Inc.

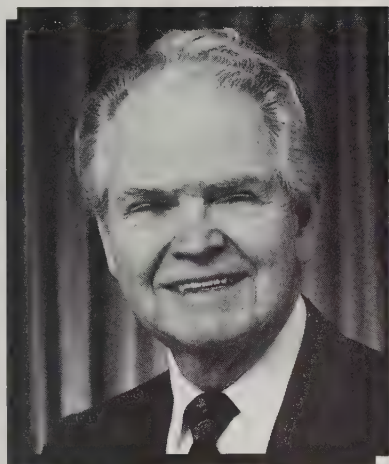
*Canadian patent #1248371 issued.

**For an up-to-date listing, contact HRCI.

The successful outcome of any implant procedure is directly related to proper surgical and prosthetic technique.

EDITORIAL

BEEN TO A DENTAL MEETING LATELY?



Dr. P. Ralph Crawford,
Editor

I guess there is some truth in what some people call me. They say, when they're not using one of the other strange monikers that I've been given over the years, that I'm a dental meeting nut.

It's true that I attend a lot of dental meetings. In late January, for example, I went back to my home province to attend the 1995 midwinter meeting of the Manitoba Dental Association. I've missed this particular meeting just once in 30 years. It isn't the weather that draws me back. January in Manitoba isn't exactly the peak of the tourist season — and the midwinter meeting is usually held on the coldest weekend of the year. No, the attraction is that dental meetings, study clubs, clinics and seminars are an integral part of dental life.

I started feeling the attraction of dental meetings early in my career, primarily because of the influence of a wise, experienced and highly respected practitioner, clinician and dental statesman — Dr. Jack Grahame.

When he graduated from the University of Toronto in the 1920s, Dr. Grahame returned to Winnipeg, where he practised until shortly before his death in 1970. In 1966, at an age when most dentists

are talking about their retirement plans, he became the first clinical director of the new faculty of dentistry at the University of Manitoba. There, his wisdom and clinical skills — plus his white hair — quickly earned him the title "The Silver Fox."

In my day, Manitoba had a 20-20-20 clinical requirement — 20 inlays, 20 gold foils (of which six had to be class IIIs) and 20 amalgams before graduation. It wasn't easy, but the Silver Fox was there to help us out of many a fix. Rumor had it that he could make any casting fit, and that he was the only man alive who could make gold solder run up hill.

It's remarkable, really, when you consider the situation that Dr. Grahame and the many other new graduates of the 1920s and '30s found themselves in when they returned to their Prairie roots to practise. With nothing but rudimentary transportation and communications links to rely on, they were virtually cutoff from continuing education facilities. Their solution was to form their own study clubs.

One of the better-known of these clubs was founded by a group of 1920s' U of T graduates who'd chosen to set-up practice in Winnipeg. Dubbed the 2T3-2T4 Club, its members met in one another's homes for almost 50 years. Today, an extension of the 2T3-2T4 Club, now comprised of University of Manitoba graduates, continues to meet under the guidance of Dr. Gordon McInnes, the son of one of the original 2T3-2T4 members.

Not that the 2T3-2T4 Club of the 1920s was original. It was preceded by other clubs both in Winnipeg and in other cities and towns across North America. In the "News Update" section of this *Journal*, for example, there's a story about a facility that was recently dedicated to Dr. Gerald Stibbs. A dentist renowned for his expertise in gold foil restorations, he mentored study clubs for almost half a century.

Their names are legion: Matheson, Stibbs, Sproule, Hare, Markley, Pound and the countless who recognized the true value in dentists getting together, exchanging experiences, learning from one

another and enjoying the camaraderie of dental professionalism. Early in my career, Dr. Grahame advised me to take at least 10 days to two weeks a year out of my practice to attend clinics and seminars. He also suggested that at least half of these meetings should be away from my home base. When I protested that I couldn't afford the time away from my office — I was a new grad, flat broke and had a family to provide for — he smiled and gently admonished, "I've never known a new graduate who wasn't broke. If you wait until you think you can afford it, you probably will never go on a course."

Looking back, that away-from-home admonition was one of the best pieces of counsel I've ever received. By attending meetings in various cities across North America, and even a few abroad, I met dentists from different backgrounds and cultures, and I was exposed to different techniques and philosophies. I also found a common bond, a camaraderie, and a joint effort to try and treat patients better. And I learned that the dental education I'd received in Canada was truly world-class.

Interestingly, Dr. Grahame's sage advice was offered well before mandatory education became part of dentistry's licensing requirements. To him there was nothing mandatory about attending meetings and courses — it was his dental way of life. In fact, I'm sure he would find today's mad scramble for points rather silly. If any dentist purposely sets out to spend 10 days or two weeks away from the office to attend dental meetings, the gathering of points becomes a joke.

For all dentists who take G.V. Black's advice seriously — "The professional has no right to be other than a continuous student" — the time spent at dental meetings, lectures and seminars must never seem enough. But for those who feel forced to attend, "O lingo, the pity of it!"

*P. Ralph Crawford, DMD
Editor of the Journal of the
Canadian Dental Association*

JOURNAL

March/
Mars
1995
Vol. 61
No. 3

SYSTEMS FOR SUCCESS

FITTING PRAISE

"IPS Empress provides unsurpassed marginal adaptation for crowns, veneers and inlays."

*David Korson
London, England*

"With Empress, not only is the fit exceptional, but the esthetics are naturally appealing."

*Dr. Robert Nixon
Beverly Hills, California*

*Restoration
and photo by
David Korson*

*Dentistry by
Dr. Robert Nixon*

FREE VIDEO

Call and ask for your free
technique video today.

IPS EMPRESS™

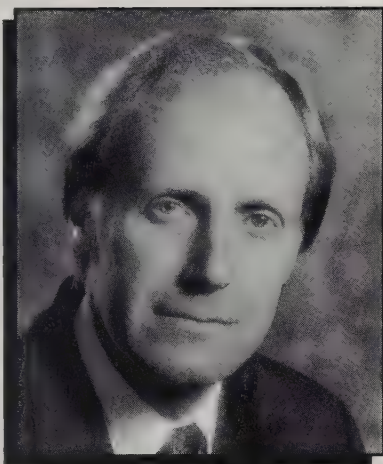
ALL CERAMIC RESTORATION

IVOCLAR WILLIAMS
IVOCLAR NORTH AMERICA, INC.

For information on this or any other products in our system, call us toll free at 1-800-5-DENTAL in the U.S., 1-800-263-8182 in Canada.

PRESIDENT'S COLUMN

NEW AND IMPROVED



Dr. Bryun Sigfstead,
President

In today's fast-paced world, nothing stands still. What's new today may be obsolete by tomorrow. And the people, companies and organizations that can't keep pace will invariably fall by the wayside.

At least that's what the marketing guru's would have us believe. Their message is pervasive. Change, adapt, regroup — or perish. How much of this talk is pure hype and how much of it is actually true remains to be seen. But each and every day we are literally bombarded with advertisements and information encouraging us to buy some product or service because it is either "new and improved," or the latest technological marvel.

There's no question that the world and the way we do business is changing. From the fax machine and personal computer to the so-called information highway, we've created a fast-paced society that expects instantaneous results. People just aren't ready or willing to wait two or three days for a response to a request, they expect an answer within two or three hours.

Like most Canadian organizations, CDA has adapted to the new

reality in the workplace. But we've also moved one step ahead of the pack, by creating a fast-track mechanism to identify the strategic and emerging issues that could ultimately have an impact on dentistry. As part of its mandate, the new priorities and issues coordination committee (PICC) will guide CDA in the allocation of resources to various issues, provide tactical advice to CDA's various standing committees, and act as the eyes and ears of executive council.

The intent is two-fold. First, the new committee will help CDA to respond more rapidly and effectively to evolving issues — by allowing us to develop appropriate positions and policies before the issues in question become full-blown concerns. And, second, PICC will allow executive council to focus more of its energies on the strategic planning and vision building activities that are so vital in today's fast-paced world.

Each fall, CDA's executive council and senior staff gather together for our annual fall planning session. During an intense three days, we scrutinize our organization from top to bottom to determine how we can best meet the needs of our members and the dental profession, we evaluate CDA's current programs and services, and we explore other alternatives. In short, it's a time for both self-assessment and blue skying.

But with the multitude of issues out there today, and the speed at which change is occurring, blue skying is more difficult than it was 10 years ago, when CDA held its first planning session. Any way you look at it, it's become a lot harder to sit down at a three-day meeting, identify the key issues affecting the profession, formulate a reasoned response to these concerns, and allocate the appropriate resources to implement that response. There's too many issues on the table, and there's just not enough time.

That's where PICC comes into the picture. By identifying the emerging issues, examining possi-

ble solutions, and proposing tactical strategies, the committee allows executive council to focus its attention on a broader range of concerns. In turn, executive council, through the board of governors, can take quick, comprehensive and effective action to resolve the issues of the day in dentistry's best interests.

The PIC committee met for the first time in January 1995. Chaired by president-elect Dr. James Brookfield, it focused on several key issues, including the evolution and long-term future of third-party dental plans, the impact of potential changes to Canada's tax system, and the need to revamp CDA's communication strategy. At the same time, the committee explored a number of more public issues, such as infection control, amalgam, the use of anti-microbial agents, and fluoridation, all of which could have an impact on dentistry and the way dentists deliver services to their patients.

It was a good meeting. PICC identified the implications that the issues on the table have for dentistry, it examined where dentistry could and should position itself on these issues both in the immediate future and over the long term, and it formulated several comprehensive, balanced recommendations.

These recommendations were then brought forward for consideration by executive council, which held its pre-board meeting February 3, 4 and 5. The next step in the process will occur April 7-8, when the PIC committee report and the executive council's report are presented to the CDA board of governors for final approval.

PICC has been established as an ad hoc committee of executive council for a two-year trial period. At that point, if PICC is as effective as we think it will be, the committee's mandate will be extended. If not, we'll have to look at other options. Either way, CDA will be "New and Improved."

*Bryun Sigfstead, DDS
President of the Canadian Dental Association*

- Who really pays for "2.9%"?
- How much does "free" air conditioning cost?
- Where can I get a straight answer?

How much ya wanna spend?

Make me an offer!

I can get you 2.9% today!



CDA Leasing... Straight Answers To Your Questions

CDA members enjoy substantial savings on new vehicles through our CDA Leasing program. Hundreds of members have taken advantage of this significant CDA Membership service since we introduced it in 1990, obtaining one or more new vehicles. CDA Leasing guarantees you the **best leasing value** in the marketplace.

We can help dispose of your existing vehicle. Lease documents are simple and straight forward, and financial terms can be tailored to meet your requirements. You can drive with no kilometer restrictions. We are here to serve you.

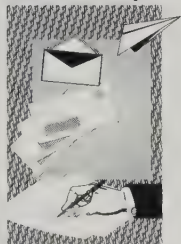
Please give us a call. **1-800-461-2923**



CDA LEASING

7100 Woodbine Ave., Suite 400, Markham, Ontario L3R 5J2 Telephone: (905) 477-5210, Toll-Free 1-800-461-2923

LETTERS



Recommendations For Fluoride

I wonder if I was alone in my disappointment that, having labored through "Recommendations Regarding Total Daily Fluoride Intake for Canadians" in the December issue of the *Journal* (Lewis, D.W., Banting, D.W., Burgess, R.C. et al.; 60:1050-60), I was not rewarded with a summary table relating age of patient, local water fluoride concentration, and what I still need to know — how much fluoride supplement, if any, I should prescribe.

My apologies to the authors, but I, for one, will not be pinning up their table (Table II) in my office — next to a pocket calculator presumably — while I try to work out, after deduction for food intake, whether to prescribe either of the two commonly available 0.5 mg F or 1.0 mg F tablets. Julia F. Houlton, DDS (Dalhousie '82) Surrey, England

Author's Response

At the outset, some background information about the paper "Recommendations Regarding Total Daily Fluoride Intake for Canadians" may be helpful. As stated at its beginning, this paper presents estimates by Canadian researchers of the recommended optimal total daily intake from all sources of inorganic F for various age groups. These recommendations were one of the specified objectives (listed in the paper) of a research contract with Health Canada. They can be compared with the estimates of actual intake produced by Health Canada or others. This is important today because of concerns about the ubiquitous availability of F and dental fluorosis.

The five methods in the literature for recommending F intake were unsatisfactory for our purposes. So we developed our own method based on Dean's time, when all F intake came essentially from ingested food and water. We are proud of this unique epidemiological approach, and that, using it, we satisfied the most difficult requirement of the research contract.

Given this background, well detailed in the paper, I do not understand how Dr. Houlton believed it would help in making specific decisions about prescribing F supplements, other than to display the caution that she already has. However, the paper was not as impractical as implied, since at its beginning and end the 1993 Canadian recommendations for F supplements were mentioned. The specific information is found in Table II in: Clark, D.C. Appropriate Use Of Fluorides In the 1990s. *J Can Dent Assoc* 59:272-279, 1993. Thankfully, its use does not require a calculator.

D.W. Lewis, DDS, DDPH, M.Sc.D, FRCD(C)
(For the 1992-1993 Fluoride Working Group)

AIDS Discrimination

The article, "AIDS and Discrimination: The Windsor Case," in the January 1995 *Journal* (Crawford, P.R. 61:25-27, 1995) is heart rending. I think our profession should show Dr. DeMarco some kind of appreciation for all his troubles. I nominate him for the "Dentist of the Year Award."

J.H. Duggan, DDS
Stratford, Ontario.

Homelessness in Canada

We would like to comment on several points in the article, "The State of Oral and Dental Health of the Homeless and Vagrant Population of Montreal" in the December 1994 *Journal* (Pizem, P., Massicotte, P., Vincent, J.R. et al. 60:1061-1065, 1994).

It is unfortunate that the authors chose to describe official categories

of homelessness without explaining to readers the economic and social forces that create homelessness, which are crucial to the understanding and acceptance that is needed by all health practitioners, including dentists. Wife abuse, job loss, a lack of affordable housing, and increasing levels of poverty, as well as federal and provincial policies of erosion to the social safety net all work to create a new class of people living in poverty in Canada. The language of the article "vagrants and homeless people often have a repulsive appearance and poor personal hygiene" further demonstrates the authors' unconnectedness to the people in question. To enhance the discourse on homelessness, the accompanying guest editorial, "A Perspective on Homelessness in Canada," by Stephen Gaetz (*J Can Dent Assoc* 60:1098, 1994), accurately provides the social and political context.

One of the primary assumptions throughout the main article is that receiving welfare assistance implies "barrier free" access to dental services. There are a number of fallacies inherent in this logic. First, as studies in Ontario¹⁻³ have shown, the bureaucracy of the welfare system itself can be a major deterrent for many. Second, many barriers that prevent people from accessing necessary services are not only financial in nature, they are also structural (cultural, linguistic, lack of physical access for disabled people) and attitudinal (discrimination against low-income and marginalized groups) barriers.^{1,3} Third, welfare payments to dentists for services rendered are often below the fees outlined in the fee guides used by most dentists. This contributes to a situation where many recipients of social assistance receive a second-class service, which has been documented in several studies with disenfranchised adults in Toronto.^{1,3} Fourth, the six-month waiting period that exists prior to accessing dental services itself is a barrier, especially for emergency treatment. And, finally, the authors should have clari-



fied the term "basic dental services," since necessary and important services, such as dentures, may or may not be available to welfare recipients.

We commend the *Journal* for publishing research of this nature so that the profession may become aware of and debate issues of access to dental services for disenfranchised populations. It was rewarding to read the authors' affirmation of the right of all welfare recipients to receive free dental care in a dignified manner. We hope that the dental profession will continue to explore ways in which it can work to eliminate both structural and attitudinal barriers to the provision of dental care to people who are marginalized by their poverty.

Joel Rosenbloom, DDS

Cathy Crowe, RN

West Central Community Health Centres, Toronto.

References

1. Ambrosio, E. et al. *The Street Health Report. A study of the health status and barriers to health care of homeless women and men in the City of Toronto.* Toronto, May 1992.
2. Rosenbloom, J. and Woolcott, L. *Dental services for welfare recipients in Metropolitan Toronto: a consumer perspective.* Presentation at the 57th annual meeting of American Association of Public Health Dentistry, New Orleans, La., October, 20, 1994.
3. Ung, H. et al. *An assessment of oral health needs of the community served by West Central Community Health Centres.* Toronto, August 1994.

ERRATA

Due to an editing error in the January 1995 issue of the CDA *Journal* (Vol. 61, No. 1), three contributors to the article "Effect on Plaque Removal and Gingivitis Of A Triclosan-Copolymer Pre-Brush Rinse: A Six-Month Clinical Study In Canada (pp. 53-56, 59, 61)" were inadvertently omitted from the list of authors. The list of authors should have read: Farid Ayad, DDS; Raymond Berta, BS, MBA; Margaret Petrone, JD; William De Vizio, DMD; and Anthony Volpe, DDS, MS. In addition, the *Journal* neglected to publish an acknowledgement indicating that the author's study was conducted under the auspices of the Colgate-Palmolive Technology Center, Piscataway, NJ. The *Journal* regrets the error, and apologizes to the authors for any confusion it may have caused.

BOARD OF GOVERNORS

NOTICE OF MEETING

Interim Meeting

The Interim Meeting of the Board of Governors of the Canadian Dental Association will be held April 7 and 8, 1995 (Friday and Saturday), at the Westin Hotel, Ottawa, commencing at 9:00 a.m.

It is brought to your attention that meetings of the Board of Governors are open to all members of the Association.

The Board is composed of twenty-five governors with voting privileges and a Chairman. Governors represent members across Canada on a 1 to 500 ratio. The Canadian Forces Dental Services, Student members and Affiliate members from Quebec are represented by one member each.

In addition, there are two non-voting members, namely, the senior dental representatives of Health Canada and Veterans Affairs Canada.

A complete listing of the Board of Governors follows:

CHAIRMAN

Dr. N.A. Mancini
2188 King St. E.
Hamilton, Ont.
L8K 1W6

PRESIDENT

Dr. B. Sigfstead
206 - 596 Riverbend
Square
Edmonton, Alta.
T6R 2E3

PRESIDENT-ELECT

Dr. J.R. Brookfield
P.O. Box 575
58 Government Rd.
Kirkland Lake, Ont.
P2N 2E4

VICE-PRESIDENT

Dr. B. Dolman
304 - 5885 Côte des
Neiges
Montreal, Que.
H3S 2T2

BRITISH COLUMBIA

Dr. J. Diggins
2425 Oak St., Ste 350
Vancouver, B.C.
V6H 3S7

Dr. M. Pedersen
102 - 3401 33rd St.
Vernon, B.C.
V1T 7Z7

Dr. W.D. Scramstad
23 - 1710 Ellis St.
Kelowna, B.C.
V1Y 2B5

Dr. P. Trester
509 - 1128 Hornby St.
Vancouver, B.C.
V6Z 2L4

ALBERTA

Dr. J.W. Blair
330 - 202 6th Ave. S.W.
Calgary, Alta.
T2P 2R9

Dr. G.P. Greeves
401 - 4600 Crowchild
Trail N.W.
Calgary, Alta.
T3A 2L6

Dr. R.D. Sandilands
224 Windermere Dr.
Edmonton, Alta.
T6H 4N7

SASKATCHEWAN

Dr. P. Rondeau
#400 - 2550 15th Ave.
Regina, Sask.
S4P 1A5

MANITOBA

Dr. T. Breneman
2915 Victoria Ave.
Brandon, Man.
R7B 2N6

ONTARIO

Dr. R. Bossin
1785 Queen St. E.
Brampton, Ont.
L6T 4S3

Dr. P. Fendrich
559 Waterloo St.
London, Ont.
N6B 2R1

Dr. R. Howard
885 Meadowlands Dr.
#412, Ottawa, Ont.
K2C 3N2

Dr. D. Somer
75 Wendover Dr.
Hamilton, Ont.
L9C 2S7

Dr. G. Sweetnam
225 Kent St. W.
Lindsay, Ont.
K9V 2Z1

AFFILIATE GOVERNOR

— QUEBEC

Dr. O. Kopytov
309 - 3535 Queen
Mary Rd.
Montreal, Que.
H3V 1H8

QUEBEC

Dr. L. Dubé
200 - 750 13E Ave. N.
Sherbrooke, Quebec
J1E 3L7

NEW BRUNSWICK

Dr. R. Murray
567 St-George Blvd.
Moncton, N.B.
E1E 2B9

NEWFOUNDLAND

Dr. T. Gushue
Village Mall, Box 93
430 Topsail Rd.
St. John's, Nfld.
A1E 4N1

NOVA SCOTIA

Dr. A.L.B. Conrod
94 St-Peter's Rd.
Sydney, N.S.
B1P 4P4

PRINCE EDWARD ISLAND

Dr. C. Jack
P.O. Box 314
Souris, P.E.I.
C0A 2B0

STUDENT REPRESENTATIVE

Mr. C. Sul
16 Kiltartan Dr.
Winnipeg, Man.
R2E 0G8

CANADIAN FORCES DENTAL SERVICES

Brig.-Gen. V. Lanctis
National Defence HQ
Maj.-Gen. G.R. Pearkes
Building
Ottawa, Ont.
K1A 0K2

NEWS UPDATE

Dr. J.A. Doiron Dies At Age 72

Dr. Joseph Aubin Doiron, the former lieutenant-governor of Prince Edward Island and a recent recipient of the Order of Canada, died Saturday, January 28, 1995, following a lengthy battle with cancer.

A man whose life path took him from a dental career in Summerside

to the prestigious post of P.E.I. vice-regal, Dr. Doiron was particularly interested in Acadian heritage and was a strong advocate of the Acadian community.

P.E.I. Premier Catherine Callbeck said she was deeply saddened by the passing of Dr. Doiron, calling him one of the province's most distinguished citizens.

"Dr. Doiron was a man of great integrity. His life was exemplified by a deep spirit of public service to

his community, his province and his country," she said. ■

Periodontists Develop French Brochures

The Canadian Academy of Periodontology has developed six French-language periodontal health brochures.

Published in cooperation with the American Academy of Periodontology (AAP), and intended for francophone patients, the new brochures are only available in Canada. They were created by translating AAP's existing English-language brochures into French.

The new brochures may be purchased by calling the Canadian Academy at: (613) 523-3876; fax (613) 523-1968. ■

B.C. Dentists Honor Dr. Gerald Stibbs

The College of Dental Surgeons of B.C. has renamed its continuing education clinic in honor of the late Dr. Gerald Stibbs.

Now known as the Dr. Gerald Stibbs Continuing Education Clinic, the facility was renamed during a special ceremony held at the college's Vancouver offices last November.

Dr. Stibbs contributed enormously to dentistry for more than half a century, both through his leadership and the many lectures and clinics that he generously gave to his chosen profession.

A 1931 graduate of North Pacific College in Portland, Oregon, Dr. Stibbs first practised in Naksup, British Columbia. He subsequently moved to Vancouver, where he met and became friends with Dr. W.J. Ferrier — and quickly became recognized as a world authority in gold foil restorations.

In 1948, Dr. Stibbs was appointed professor of operative dentistry at the University of Washington and developed the school's first graduate program in restorative dentistry. He died in July 1993.

The renaming of the B.C. College's continuing education clinic, as well as the placement of a photograph and inscribed bronze plaque, was made possible through the sponsorship of two British Columbia gold foil study clubs — the Vancouver Ferrier and the Walter K. Sproule. ■



The Dr. Gerald Stibbs Continuing Education Clinic at the College of Dental Surgeons of British Columbia. Present at the dedication ceremony are (l to r): Dr. Stibbs' daughter and son, Ms. Denise Parker and Mr. Gerald Stibbs, Jr., and two members of the organizing committee, Drs. Ludlow Beamish and Bruce McAlpine.

ODA Seeks Help in Holding Price Line

In an unprecedented move, the Ontario Dental Association (ODA) has written to the presidents and chief executive officers of Canadian dental manufacturers and distributors asking them to forego any 1995 price increases on dental supplies and services.

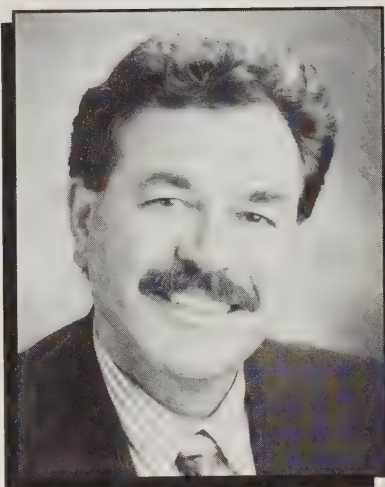
"During the ODA's November board of governor's meeting, it was agreed that the suggested fee guide for general practitioners will not be increased in 1995. We expect most of our members will not increase their fees," wrote ODA president Dr. Richard Bossin in his January 17 letter.

"The ODA's board of governors took this position in spite of a consultant's report which recommended an increase of 2.7 per cent for Ontario dentists to retain the same purchasing power as in the previous year. Our board of governors felt that it would not be in the best interest of the public to increase dental fees in light of Ontario's high unemployment, poor economic conditions and decline in dental plans.

"In the past, many of the costs for your products and services have been passed on to the patient. We

will find it difficult to freeze our fees while paying increased costs for your goods. I urge you to demonstrate the same restraint we have, and hope you will consider holding the line on price increases in 1995." ■

New Direction For Alberta Dental Faculty



Dr. W.J. Sharun, president of the Alberta Dental Association: "Today marks the beginning of a partnership in health education."

Oral health sciences at the University of Alberta will be integrated within a restructured faculty of medicine in 1996 if the university's board gives final approval to a new strategy to preserve dental education in the province.

In a January 13, 1995, press release, University of Alberta president Dr. Rod Fraser said: "The integration promises to provide the university with an opportunity to play a leadership role in the development of a program that will be at the forefront of dental education."

The announcement came as good news to the dental faculty, which has been threatened with closure for more than a year. Previous plans under consideration included closing the school entirely, or seeing it enter into a unique arrangement whereby the academic portion of dental education would remain within the university, while the clinical portion was administered on a not-for-profit basis by a non-university board.

Getting Started in Dentistry — The First Five Years



For two days in December, senior students at the University of Western Ontario participated in Getting Started in Dentistry — The First Five Years, the popular practice management seminar co-sponsored by CDA, Expendent and CDSPI. Posing with the students are: seated centre, Dr. Robert Brandon, a lecturer in practice management at the University of Western Ontario (UWO); standing centre, Mr. Imtiaz Manji, a principal of Expendent Consultants; left, Dr. Tom Snyder of Expendent; Ms. Linda Teteruck, CDA's director of communications; and right, Dr. David Johnston, chair of the division of community dentistry at UWO.

Alberta Dental Association president Dr. Bill Sharun said that the event: "Marks the beginning of a partnership in health education between the oral health sciences — including dentistry and dental hygiene — and medicine. Professionals, educated and working together, will provide Albertans with the continuation of dental education in Alberta, as well as the development of

innovative oral health programs to meet the needs of Albertans into the 21st century.

"Less than a year ago, Albertans faced the closure of the faculty of dentistry. The decision of the board of governors is a result of the overwhelming support of Albertans, and the innovative and collaborative efforts of a task force representing the public, the dental and dental hy-

GUARANTEED TO PREVENT DECAY IN DENTISTS.



No one wants to see their hard earned profits being eaten away by all the costs involved with running, or starting up, a practice. We've got a plan to help prevent financial decay. It's called the Scotia Professional Plan™, and you'll

find it right next door at Scotiabank. It's a unique plan we've designed specifically to save dentists time and money. You'll receive higher loan limits at lower interest rates. Interest on current accounts at Money Market rates.



Pre-approved overdraft protection. A ScotiaGold® VISA* card with no annual fee. A specially trained Scotiabank manager will customize the Plan for you. Whether that means 100% financing for your business or personal needs.† Or meeting your longer term investment goals. We'd like to meet with you to tell you more. Just contact your local Scotiabank branch for a free financial check-up. SCOTIA PROFESSIONAL PLAN...NOW AVAILABLE ON CDAnetplus

Scotiabank 

 **CDAnetplus**

giene professional associations, faculty, students and the university administration."

The board hopes to achieve a base saving of \$2.5 million as a result of the integration. University administrators have been asked to form a working group with a mandate to develop a detailed plan for the integration by April 1995. That plan will go to the board for approval in June, and integration should be complete by April 1996. ■

Dentists Offered Free Print by Renowned Artist



Reflexion Against Tobacco Smoking by Yves Joseph Nolet.

A renowned Canadian artist is offering Canadian dentists "free-of-charge" copies of *Réflexion*, his exceptional work of art against tobacco smoking.

Yves Joseph Nolet, a Montreal native, is referred to as a neo-impressionist artist whose works speak of his depth perception and experiences in life, interwoven in colors and forms of serenity and essenceful realities. His original paintings usually sell for between \$10,000 and \$250,000.

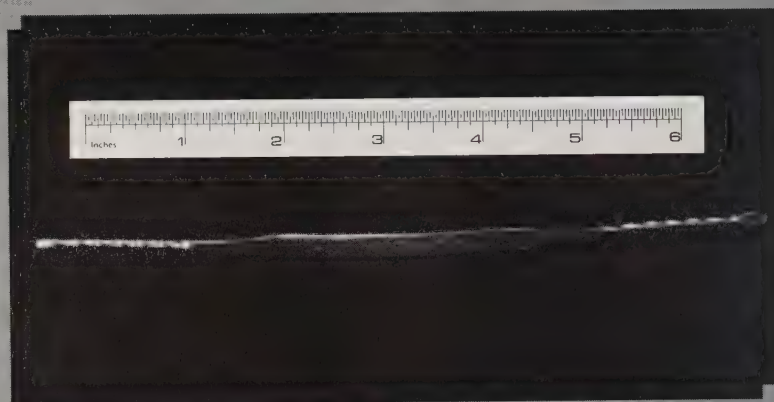
Réflexion recently won an "Honorable Mention" during the University of Montreal's recent scientific day on pneumology.

Dentists may obtain a free 22 x 28 print of *Réflexion* by writing to Yves Joseph Nolet Collections, P.O. Box 163, Ahunatic Branch, Montreal, Que. H3L 3N7, and enclosing \$2 for shipping and handling. ■

"WHAT'S IT?"

This month's "What's It" mystery item is a puzzler — a "springy" puzzler. Made of flexible steel, it is about seven inches long with twisted ends. One end of the device has a cup-like shape, with a small hole in the middle. We are told it definitely

belongs in the dental office or the home medicine cabinet. Any reader who can identify the object is asked to contact the editor. Please write to: Dr. P. Ralph Crawford, Editor, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6. ■



OBITUARY

Dr. Robert Douglas Reid

A Prince Albert, Saskatchewan, dentist known for his heroism and for his three terms of service on the Saskatchewan Council of Dental Surgeons has died.

Dr. Robert Douglas Reid passed away December 29. Born in Swift Current, Saskatchewan, he subsequently graduated first from the University of Toronto's dental class of 1939. That same year, he enlisted in the Canadian Forces.

In all, Dr. Reid served six years with the army. As a member of 22nd Field Ambulance, 3rd Division, he landed with the assault troops on D-Day, and was awarded a special commendation for "meritorious service and devotion to duty from Field Marshall Montgomery.

After the war, Dr. Reid entered a private practice in Prince Albert, Saskatchewan. A life member of both the Saskatchewan College and the Canadian Dental Association, he was inducted into the Saskatchewan Sports Hall of Fame in 1976. ■

LIBRARY PACKAGE

Library package for March 1995 is **DIAGNOSING ORAL CANCER**.

This package is available to CDA members for a fee of \$5. Call the library at: 1-800-267-6354 ext. 223; or fax your request to: 613-523-6574.

New books in the library: (Each of the following can be borrowed by CDA members for a \$5 shipping fee)

Andreasen & Andreasen *Textbook and color atlas of traumatic injuries to the teeth*. 3rd ed. Mosby, 1994.

Bradley, RM *Essentials of oral physiology*. Mosby, 1995.

Gelb, H. *New concepts in craniomandibular and chronic pain management*. Mosby-Wolfe, 1994.

Glick, M. *Dental management of patients with HIV*. Quintessence, 1994.

Sherring-Lucas, M and Martin, P. *Attachments for prosthetic dentistry*. Quintessence, 1994.

Tyldesley, WR. *Color atlas of oral medicine*. 2nd ed. Mosby-Wolfe, 1994



Introducing Hospital Cash Insurance — The Plan That Complements Your Existing Health Coverage

Dr. James N. Wright,
President of CDSPI

Imagine what would happen if you went to your doctor concerning abdominal pain and were told that you'd have to spend a few weeks in the hospital for tests and treatment. Fortunately, living in Canada, you wouldn't have to worry about basic hospital bills and health insurance, since you're covered under your government plan. But once you're lying in that hospital bed, you may start thinking about all the hidden costs that, in fact, usually come out of your own pocket.

Examples of such costs include T.V. rental, phone rental, long distance calls (to tell your mother everything's fine), the \$10 your spouse spends to park each time she or he visits you, money for the baby-sitter at home, and other larger costs, such as getting a semi-private room if you don't have extra insurance coverage. And, of course, you also lose income.

You could add on even more hidden costs if it's your spouse who's hospitalized — let's say for a month. Now there may be day care for the kids, the cost of flowers, a month's worth of parking, flight costs for your in-laws' visit, their car rental, and perhaps hotel costs.

As you can see, the costs add up. Your government health insurance and extra private health insurance will cover medical expenses, but being in the hospital involves a significant amount of non-medical ex-

penses. For example, the Canadian Cancer Society estimates that 67 per cent of the costs related to cancer come from indirect expenses not covered by medical plans.

Covering all of these non-medical expenses is the whole idea behind Hospital Cash Insurance, a new plan for 1995 from the Canadian Dentists' Insurance Program (CDIP). The plan covers you three ways:

- daily benefits if you're hospitalized due to illness or injury,
- a lump-sum benefit (of up to \$10,000) if you're diagnosed with a serious medical condition such as cancer, heart attack or stroke, and
- daily benefits for certain special situations — day surgery of any kind, outpatient cancer treatment, or home nursing after being hospitalized.

You can use your benefits however you wish — there are no receipts to submit. And benefits are tax-free.

Why CDIP Is Offering Hospital Cash Insurance

As the only insurance program specifically designed for Canada's dentists, CDIP recognizes our unique situation and needs. As self-employed professionals, most dentists have no employee benefits package — unlike many of their

neighbors who work for a company or business. Hospital cash insurance is just one way that CDIP makes the playing field more equitable.

In fact, one of CDIP's mandates is to offer dentists the same benefits — such as hospital cash insurance — that other individuals have found valuable, providing it's possible to put together a plan that is as good as or better than the leading plans in the marketplace.

There's no question that CDIP's Hospital Cash Insurance plan is as good as the market leader, because it's underwritten by the market leader — AFLAC Insurance Company of Canada. This company is the largest provider of supplemental health insurance in North America, and is rated A+ (Superior) by A.M. Best. About 100,000 business and professional groups participate in AFLAC programs.

Why is hospital cash insurance so popular? First of all, because of all the hidden costs, such as the ones I outlined previously. And also because — unfortunately — the probability of being hospitalized can be relatively high.

If you or anyone in your family has been in the hospital during the last couple of years, you already know the importance of this coverage. If not, consider these statistics: nearly four in 10 Canadians will develop cancer, one in three will

develop heart disease, and one in four will suffer a disability from an accident. When you add the chances of being hospitalized for all the other possible reasons, it's obvious why so many people decide to add this plan to their personal insurance program.

Hospital Cash Insurance Complements Long Term Disability Insurance

At first thought, some people believe they don't need hospital cash insurance if they have long-term disability (LTD) coverage. But that's not the case. You have to remember that LTD coverage usually has a significant waiting period before benefits begin, while CDIP Hospital Cash Insurance benefits begin the first or second day you're in hospital. So, if you do suffer a

disability and are hospitalized, this plan gives you daily support while you're waiting for your disability benefits to begin.

In addition, even if you suffer a disability and collect disability benefits, they only replace a percentage of your income. You're still going to have all of those extra expenses and hidden costs over and above your normal cost of living. And it's these extra expenses and hidden costs that hospital cash insurance is designed to cover.

Remember that LTD only provides coverage for yourself. But with CDIP Hospital Cash Insurance, you have the option of purchasing family coverage that will also cover your spouse and dependent children.

I believe this addition to the Canadian Dentists' Insurance Program is an important plan that

every-one should learn about. First, the likelihood that you or someone in your family could be hospitalized, on its own, is high enough to make this plan one worth considering. Also, if someone is hospitalized, you don't need the additional problem of paying significant extra costs yourself when insurance can cover you. In addition, hospital cash insurance fills in the gaps of two existing plans — your government health coverage and long-term disability insurance.

As always, if you have any questions about this or any other CDIP plan, please feel free to call a friendly, knowledgeable Personal Service Representative at CDSPI. Just call 1-800-561-9401 toll-free, or in Metro Toronto, (416) 296-9401. ■

DON'T JUST THINK ABOUT IT
DO IT!



HITCHHIKING



CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	* Unit values at		12 Month Return %
	January 31, 1995	December 31, 1994	
Bond & Mortgage Fund	11.18880	11.20352	-5.6%
Common Stock Fund	22.23858	23.03948	-8.3%
Money Market Fund	69.35394	69.13574	4.8%
Balanced Fund	41.74759	42.71952	-5.8%
Aggressive Fund	8.39653	8.74502	N/A

G.I.C. Fund

Term	January 31, 1995	December 31, 1994
1 yr	7.75%	7.25%
2 yr	8.45%	8.15%
3 yr	8.45%	8.15%
4 yr	8.70%	8.40%
5 yr	8.90%	8.65%

(*Rates subject to change without notice.)

*Total Net Assets (market value) of the Plan as of:

(includes RRIF assets)	January 31, 1995	December 31, 1994
	\$183,412,409.00	\$186,162,038.00

For further information:



CDSPI

Write:

CDSPI
Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:

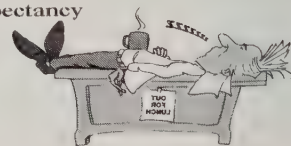
416-296-9401 Metro Toronto
1-800-561-9401 Service in English
Extensions:
252, 253, 254
1-800-665-9401 Service in French
1-416-296-8920 Fax.

DID YOU KNOW?

Living longer, working less. . .

Life and working expectancies for men, at age 16, from 1921 to 1986:

Year	Life expectancy	Working life expectancy	Proportion of life expectancy in labor force (%)
1921	51.8	46.8	90.3
1951	54.5	46.9	86.1
1986	57.9	44.6	77.0



JOURNAL

March/
Mars
1995
Vol. 61
No. 3

METASYS

METASYS *Eco Center*



The **METASYS Eco Center** is designed for safe storage of amalgam scrap and extracted teeth with amalgam fillings.

The **METASYS Eco Center** can be expanded with additional storage units for amalgam waste from traps or amalgam capsules.

A carbon disc on each unit keeps Mercury vapors contained.

The **METASYS Eco Center** offers a unique pre-paid mail away system for containers filled with amalgam waste.

For more information, please contact your nearest dealer or **METASYS**.
(U.S.A.) 801-627-6316 (Canada) 905-692-9073

BOOK REVIEWS

Culture and Education at Northwestern University (1891 - 1993)

by Clifton Dummett and Lois Doyle Dummett

1993, Northwestern University, Chicago; 363 pages, black and white illustrations, \$35

This book was published to celebrate the 100th birthday of one of dentistry's outstanding educational institutions. It should be no surprise to anyone who knows Northwestern University Dental School (NUDS) that the authors selected for this project were Dr. Clifton Dummett and his wife Lois. Dr. Dummett is a distinguished alumnus of NUDS and adjunct professor of social ethics and dental history. The book demonstrates how well the couple work together, and represents a vast amount of research not only of NUDS, but also of faculty members, the community, and organizations that came together to create the school and served it through the century.

To have the necessary space and a desirable location for training dental students, Northwestern acquired a proprietary dental school. It concentrated its efforts on selecting a faculty of professionals from the leading clinicians and research enthusiasts of the day, and has continued to follow this tradition as closely as possible. Back then, the concern was to lead dentists from functioning as clinical mechanics, and move them toward a concern for their patients' health and well-being in its broadest application.

The Dummetts begin the text with two chapters introducing the reader to the city of Chicago and its history from the time that NUDS was established. They go on to describe the many ways in which dentistry was active in this burgeoning city, and then highlight each of the dental school's deans in succession.

This book would be of particular benefit to those who are interested in dental history, since it introduces the role of the city of Chicago in the development of our profession. It's no accident that Chicago is the home of the largest annual dental meeting in the U.S., and the location of the American Dental Association's headquarters.

The role of Northwestern University alumni in maintaining the school itself, and the enthusiasm they have exhibited in the support of their faculty, is an example of how loyalty can build and strengthen a worthy institution. As a keen observer once said, "an institution is the shadow of a man," and this, I believe, is true of NUDS.

My only criticism of this book is that there is not more concentration on the work of G.V. Black, who represents so much to both the building of the dental school and the progression of dentistry as a whole.

It is generally conceded that culture cannot be taught. To demonstrate the cultural richness of NUDS, therefore, the authors refer to the elements that contribute to uplifting life on the dental campus. For example, the G.V. Black historical collection — which has since been transferred to the Smithsonian Museum in Washington — was housed, for most of the century, in the Montgomery Ward Building, the William Bebb Library, and Dentistry's Hall of Fame. Thorne Hall is an unusually fine social and cultural centre for students. And perhaps the most important cultural influence of all was that of the dental faculty and its "men of quality."

The Dummetts have produced a fine piece of work that would be of merit to all who are interested in broadening their knowledge of the history of dentistry at NUDS, and its cultural contributions.

Reviewed by:

George A. Brass, DDS, Professor Emeritus, University of Manitoba

Practical Endodontics — A Clinical Atlas

by Edward Besner, Andrew E. Michanowicz, and John P. Michanowicz

1994, Mosby-Year Book Inc., St. Louis; 272 pages, 923 illustrations, \$87.75
ISBN: 0-8016-7798-X

This text is intended as a guide and chairside manual to assist the general practitioner in providing endodontic treatment. It does not, however, discuss the biological basis of endodontic therapy. Readers will have to refer to other textbooks

and literature to obtain more detailed biological information.

The authors purposely limited the scope of this text to the treatment of the endodontically-involved pulp and extended periapical lesion by a non-surgical approach. Their premise is that more than 90 per cent of all endodontic problems can be treated by conservative therapy.

Because there has been a constant inundation of new techniques and materials in this field, it is often difficult for the general practitioner to determine the most appropriate treatment. This book is a summation of all the authors' experiences and expertise in clinical practice, therefore the treatments outlined are reliable and predictable.

The section on diagnosis is good from a clinical diagnostic standpoint, and the chapter on radiographic interpretation by Albert Gorig was well written and useful. This very difficult subject was well explained, in most instances, with the help of slides and drawings. However, some of the text and line drawings were difficult to follow.

Another particularly helpful chapter was the one that outlined a number of hints for radiographic diagnosis. The explanation of the "slob rule" was quite well done. Overall, this is a good chapter on a very difficult subject.

However, the chapters on routine endodontic therapy and thermoplastic gutta percha merely skim the surface. I had difficulty following some of the text and photographs, as well as the flow of the techniques described. From the readers' perspective, the authors have attempted to address too much critical information in a very condensed manner.

Unfortunately, the photographs and many of the X-rays were of poor quality and difficult to interpret, and many of the intraorals were either too dark or too light.

Based on the stated goal of the authors — to produce a text strictly as a guideline for the student and novice practitioner — I believe that this text is a success.

Reviewed by:

Fred Weinstein, DMD, MRCD
Seasonal lecturer at UBC.

CLINICAL



Immediate Implant Post-Surgical Complications

C.G. Ibbott, DMD, FRCD(C)

R.D. Oles, DDS, MS

ABSTRACT

Immediate surgical implants provide a convenient means of replacing missing teeth without requiring hard tissue reduction of restoration-free potential fixed partial denture abutments. Although the procedure is described as "predictable," complications and failures do occur. This report presents four cases of immediate implant complications and their management, and discusses possible causes of the untoward results.

Careful pre-operative planning, adequate surgical technique and post-surgical management, timely and suitable loading, and meticulous hygiene maintenance can serve to minimize implant complications and failures.

The prospective immediate implant patient must be provided with sufficient information to allow informed consent to be given. Minimal requirements are a description of the procedures in terms the patient can understand, an explanation of potential risks and complications, and adequate disclosure of information about alternative therapies.

SOMMAIRE

La candidose buccale est un problème qu'on observe souvent chez les plus âgés souffrant d'une maladie chronique et vivant dans

un établissement de santé parce qu'ils sont sujets aux maladies systémiques, prennent beaucoup de médicaments et ont des prothèses complètes.

Aussi, dans un groupe de personnes âgées vivant dans un établissement de santé, a-t-on procédé à un essai clinique randomisé afin de déterminer l'efficacité d'une solution de trempage antifongique pour prothèses (48 ml de Nystatine liquide à raison de 100 000 UI/ml dissoutes dans 432 ml d'eau distillée, ce qui a produit une solution de 10 000 UI de Nystatine au ml) utilisée comme un adjuvant à une pastille vaginale Nystatine (100 000 UI/g) dissoute dans la bouche trois fois par jour pendant sept jours. Bien que les signes et les symptômes cliniques aient disparu chez tous les sujets, on a décelé la présence d'hyphes de la *Candida* invasive dans environ 80 pour cent des tissus ou des prothèses après la thérapie. L'utilisation d'une solution de trempage antifongique pour prothèses n'a causé aucune différence décelable dans la présence des hyphes de la *Candida albicans*, comparée à la consommation d'eau du robinet pendant trois mois ($M-H \text{ Chi}^2 = 0,021$, $p = 0,886$), mais elle a réduit le taux de récurrence des signes et des symptômes cliniques. Pour le traitement de la candidose buccale, on se demande donc si ce régime est indiqué.

Introduction

An immediate surgical implant is placed at the time of tooth extraction or two to three months afterward. This differs from the original Brånemark protocol in which the extraction site was left to heal for nine to 12 months before implant placement. Immediate implants facilitate the early replacement of missing teeth, without requiring hard tissue reduction of largely restoration-free potential abutments for fixed partial dentures. For the patient who can afford and tolerate the immediate implant procedure, it provides an effective way to restore a deficient dentition to an adequate functional and esthetic state, without compromising the remaining intact teeth.

Although immediate implant surgery is often described as a "predictable" procedure, it is not without some risk of unfavorable results or complications. The purpose of this paper is to describe four cases where complications followed immediate implant surgery, and to discuss the ways in which these problems were managed.

Inadequate Implant Alignment

A 42-year-old female school teacher presented with a primary complaint of pain involving the maxillary right central incisor. An

JOURNAL

March/
Mars
1995
Vol. 61
No. 3



Fig. 1: Implant in labioverted position.



Fig. 2: High labiocervical margin of finished crown.

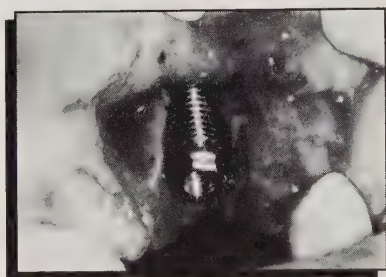


Fig. 3: Implant outside bony confines of surgical site.



Fig. 4: Exposed GTAM barrier four weeks after implant placement.

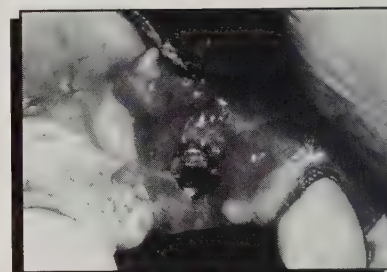


Fig. 5: Implant with GTAM barrier removed 11 weeks after placement surgery.

exploratory flap procedure* revealed a vertical root fracture and extensive labial bone loss. The patient was offered two treatment options: immediate extraction of the affected tooth, with bone grafting and membrane barrier, followed by stent-guided implant placement and restoration nine months later; or tooth removal followed by immediate implant placement with bone graft and membrane barrier, using mandibular incisors as an implant positioning guide.

After considering the treatment options and possible adverse treatment results, the patient elected to proceed with tooth removal and immediate implant placement. Following tooth removal, a 13 mm standard Brånemark implant fixture[†] was placed into the extraction socket and Gore-Tex Augmentation Material (GTAM)[‡] was adapted over the site, which was then covered by the sutured soft tissue flap. Because the implant was within the confines of bone, no bone grafting was needed for space maintenance over the fixture. After six months, the implant was uncovered and seen to be placed too far labially for an ideal

esthetic result (**Fig. 1**). Two months later, the implant was restored with a Nobelpharma CeraOne[§] crown with angle correction.

Because of the immediate implant labioversion, the final restoration had a very high cervical margin (**Fig. 2**). Fortunately, the patient's lip line was low and the esthetic result was satisfactory.

Pre-surgical fabrication of an implant guidance stent would have ensured a more desirable implant alignment and improved esthetic treatment results. The need to embark on treatment immediately to deal with pain and patient desires precluded that approach.

Early Membrane Barrier Exposure

A 36-year-old woman received an immediate 15 mm standard Brånemark implant, facilitated by a surgical guidance stent, at the site of a previously extracted maxillary left central incisor. Because the implant was outside the confines of bone (**Fig. 3**), decalcified freeze-dried bone allograft (DFDBA)^{**} mixed with tetracycline (250 mg in 5.0 mL sterile saline) was placed over the implant.

The implant and adjacent bone were covered by GTAM and the soft tissue flap margins were sutured to cover the surgical site.

Although initial healing was uneventful, four weeks after the surgical procedure the membrane barrier became exposed (**Fig. 4**). The patient was instructed to use chlorhexidine (Pericide)^{##} rinses twice daily at the site, and was monitored weekly. After seven weeks, the membrane barrier was removed (**Fig. 5**). Reddish granulation tissue, seen at that time, usually indicates that successful bone fill will follow, and that was the case. The implant was successful and was subsequently restored.

GTAM has a tendency to migrate through incision lines. According to Mellonig,² this happens in about 50 per cent of all cases. There is a risk of infection and partial integration loss with early membrane exposure, so if membrane exposure does occur, an attempt should be made to retain it in place for at least six weeks. If there is no exposure, the material should be left for an entire six-month healing period.

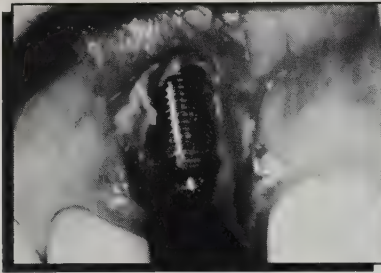


Fig. 6: Implant placed with surgical stent guidance.

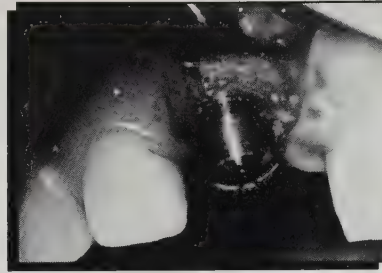


Fig. 7: Implant and regenerated bone six months after placement surgery.

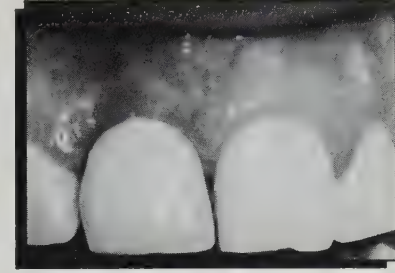


Fig. 8: Temporary crown in place.



Fig. 9: Radiographic evidence of coronal bone loss and thread exposure.

Late Implant Thread Exposure

A 17-year-old woman received an 18 mm standard Brånemark System immediate implant fixture at the site of a previously extracted maxillary right central incisor, which was placed with the guidance of a surgical stent (**Fig. 6**). This "no wall" implant situation was managed with a DFDBA bone graft, for space maintenance, and GTAM membrane barrier. When the site was uncovered after six months, bone regeneration was observed clinically (**Fig. 7**) and radiographically.

A bonded temporary crown was fabricated and placed (**Fig. 8**). When the site subsequently was uncovered, loss of coronal bone and thread exposure were apparent clinically and radiographically (**Fig. 9**). A collagen membrane (Periogen)⁺⁺ was then placed in the hope that some bone fill around the implant might result. If satisfactory repair and regeneration occur, the implant will be restored. If not, the implant will be removed with a

trepphine and a new fixture placed utilizing DFDBA grafting and GTAM placement.

Although the reason for the thread exposure is not clear, bacterial infection around the cervical margins of the temporary restoration is a likely cause. It has also been suggested that excessive biomechanical forces on the implant cause trauma at the coronal bone/implant interface, which leads to osseointegration loss.³ This particular case was complicated by the revelation that the patient was admitted to a substance abuse program soon after the implant surgery. We were unaware of a drug problem and, if it had been apparent, would not have proceeded with the implant.

Soft Tissue Fistulae

Three weeks before referral, a 16-year-old woman had lost both maxillary central incisors and the maxillary left lateral incisor following accidental trauma. Two stent-guided 15 mm standard Brånemark System implant fixtures were placed; one at the right central incisor site and the other at the left lateral incisor site. Because of bone deficiency at the central incisor location, GTAM was used to cover exposed implant threads at the coronal one-third of the fixture. Six months later, the implants were uncovered and the GTAM removed. Facial soft tissue augmentation was needed, and palatal connective tissue grafts were used for this purpose (**Fig. 10**). After healing, 5.0 mm to 6.0 mm soft tissue collars were evident.

Two Nobelpharma angulated abutments[#] were used for the restorative phase of treatment. The initial result was satisfactory, but within eight months fistulae ap-

peared at the fixture/abutment junction of each implant (**Fig. 11**). The problem was managed by removing and sterilizing the abutments, removing granulation tissue around the implant heads, and re-seating the abutments at 20 Newton cm with the Nobelpharma torque controller.[#] No bone loss or thread exposure was noted at the areas of soft tissue pathosis. Healing was uneventful, and the final treatment result is seen in **Fig. 12**.

Possible explanations for the fistulae at the fixture/abutment interfaces are: loose abutment screws; infection related to improper abutment seating; residual avascular GTAM subjacent to alveolar mucosa; or friable alveolar mucosa at fixture/abutment junction instead of the more desirable thicker, keratinized masticatory mucosa. In this case, fistulae appeared at the mucogingival junctions that corresponded to the fixture/abutment junction of each implant. Nevins⁴ has suggested that a deep subgingival collar may contraindicate implant placement because of infection possibilities and difficulty in seating implant components.

Discussion

Should an immediate implant be placed into an extraction socket at the time of tooth removal? Such an approach can save time and require fewer surgical procedures, but should not be considered if there will be a problem with primary soft tissue closure or if the implant cannot be placed within an osseous envelope. As with other periodontal defects, there is a direct correlation between the number of bony walls present and the likelihood of defect healing



Fig. 10: Facial soft tissue augmentation with palatal grafts.



Fig. 11: Fistulae at implant fixture/abutment junctions.



Fig. 12: Final treatment result showing fistulae resolution.

and regeneration. If there is a probability of coronal absence of osseointegration, implant placement should not be done at the time of tooth removal. Also, the immediate implant is not suggested for teeth posterior to first premolars because of problems related to bone properties and sockets of multi-rooted teeth.

Although, in theory, a competent clinician should be able to place a single tooth implant properly without a surgical guidance stent, we have found that results are consistently better when a stent is used.

The current trend is toward a more conservative approach to immediate implants and a two- to three-month interval between tooth removal and implant placement. This protocol makes soft tissue closure easier, reduces the need for augmentation membranes and, when membranes are needed, lessens the chances of exposure. If, at the time of surgery, it appears that the implant cannot be placed within the confines of bone, it is better to augment the site with a membrane alone, or with a membrane and bone allograft, and delay implant placement

for six to nine months. This will reduce the chances of thread exposure at the coronal aspect of the implant.

Tonetti and Schmid,⁵ in a review of the pathogenesis of implant failures, described two different time frames for failures: early failures related to an undesirable wound healing process; and late failure associated with pathosis involving a previously osseointegrated implant. Early failures may be due to inadequate and overly traumatic surgical technique, bacterial contamination, insufficient maintenance or premature loading. Late failures might be due to lack of an equilibrium of biomechanical factors (forces) and host-parasite factors (infection). Prevention of implant failure would be enhanced by adequate surgical technique, proper post-operative management, timely and suitable loading, and meticulous hygiene maintenance.

Worthington et al⁶ reviewed problems encountered after four years of using the Brånemark implants and concluded: "Most of the problems were iatrogenic and avoidable by careful planning, adherence to the recommended protocol, and the exercise of good judgement."

Because untoward results do occur, it is necessary to provide prospective immediate implant patients — and indeed all patients undergoing any type of treatment — with sufficient information to allow informed consent to be given before proceeding with treatment.⁷ Zinman⁸ reported that

there are three minimum requirements for disclosure when seeking informed consent: the treatment must be described "... in lay terms so the patient understands the nature of what is proposed ..."; potential risks must be explained; and alternative therapies should be disclosed.

Obviously, the operator who places the implant and the dentist who restores the implant must provide a realistic appraisal of the downside of the procedure. However, it seems apparent that the general dentist who does neither the surgical nor restorative phases of treatment, but does refer patients to specialists, also has an obligation to be knowledgeable about the procedure and its various untoward results.

Conclusions

Although the immediate surgical implant is considered "predictable," complications and failures do occur. This paper has presented four cases of complications and describes the methods that were used to deal with them. Proper pre-operative planning, good surgical technique, use of surgical guidance stents, adequate post-implant hygienic maintenance and timely, suitable occlusal loading should minimize undesirable immediate surgical implant sequelae.

It is important that the prospective immediate implant patient be advised of possible adverse results as a prelude to giving informed consent to proceed. ■



MICROSOFT®
WINDOWS™
COMPATIBLE

GET THE POWER OF WINDOWS™

WITH WINDENT

THE DENTAL OFFICE MANAGEMENT SOFTWARE FOR WINDOWS

Power management in dentistry means having easy access to and control of information that impacts your patients and your bottom line.

See Windent demonstrated by A Bit Better Computing at these dental conventions:

British Columbia Dental Meeting
Ontario Dental Meeting
Alberta Dental Association Annual Meeting
Canadian Dental Association Meeting

March 2-4, 1995
May 11-12, 1995
May 25-28, 1995
August 28-29, 1995

Or, call today for more information on how to put the power of Windent to work in your office.



&

**A Bit Better
Computing**

800/436-2379

Dr. Ibbott maintains a private practice in periodontics in Regina, Saskatchewan.

Dr. Oles is a periodontist and a professor in the department of oral biology, college of dentistry, University of Saskatchewan.

Reprint request to: Dr. Oles, Department of Oral Biology, College of Dentistry, University of Saskatchewan, Saskatoon, Saskatchewan S7N 0W0.

* Each of the four patients described in this report received oral antibiotic prophylaxis according to the following regimen: one gram ampicillin one-half hour before the procedure, followed by 500 mg q.i.d. for seven days.

Nobelpharma Canada Inc., 200 Yorkland Blvd., Suite 600, North York, Ontario, M2J 5C1.

+ W.L. Gore & Associates, P.O. Box 2500, Flagstaff, Arizona 86003-2500, U.S.A.

** Tissue Bank, Department of Orthopedics and Rehabilitation, University of Miami School of Medicine, 1600 N.W. 10th Ave., Room 8084, Miami, Florida 33136, U.S.A.

Perio Specialty Products, 231 Mountain Highway, Box 52006, North Vancouver, BC V7J 1J7.

++ Collagen Corporation, 2500 Saber Place, Palo Alto, California 94303, U.S.A.

References

1. Gelb, D.A. Immediate implant surgery: three-year retrospective evaluation of 50 consecutive cases. *Int J Oral Maxillofac Implants* 8:388-399, 1993.
2. Mellonig, J.T. Lecture, San Francisco, California, November 5, 1993.
3. Jovanovic, S.A. The management of peri-implant breakdown around functioning osseointegrated dental implants. *J Periodont* 64:1176-1183, 1993.
4. Nevins, M. Lecture, San Francisco, California, November 5, 1993.
5. Tonetti, M.S. and Schmid, J. Pathogenesis of implant failures. *Periodontology* 2000 4:127-138, 1994.
6. Worthington, P., Bolender, C.L. and Taylor, T.D. The Swedish system of osseointegrated implants: problems and complications encountered during a four-year trial period. *Int J Oral Maxillofac Implants* 2:77-84, 1987.
7. Gommerman, J. Informed consent — the process. *J Can Dent Assoc* 60:202-203, 1994.
8. Zinman, E.J. Informed consent to periodontal surgery — advise before you incise. *J West Soc Periodont: Periodont Abstr* 24:101-115, 1976.



Today I learned something new from an old friend.

You know, Thelma and I have been best friends since high school. Well, because Thelma is such a close friend, I thought I knew everything about her.

That is, until Thelma mentioned she'd just recently changed her will — to include a bequest for the Canadian Cancer Society.

Thelma said that even though she's always made annual donations to the Society, she wanted to do something extra. Because, she said, cancer can be beaten.

So then I thought, "Cancer *must* be beaten...and leaving a bequest is another good way I can help."

If you or your lawyer want to know more about the Society and what we do, telephone or write the Canadian Cancer Society.

This space contributed as a public service.

CANADIAN
CANCER
SOCIETY



SOCIÉTÉ
CANADIENNE
DU CANCER

CLINICAL



Effectiveness of a Topical Antifungal Regimen for the Treatment of Oral Candidiasis in Older, Chronically Ill, Institutionalized, Adults

David W. Banting, DDS, PhD

Patricia A. Greenhorn, DDS

Janice G. McMinn

ABSTRACT

Because of predisposing systemic disease, the frequent administration of medication, and the use of a complete denture, oral candidiasis is a common problem among older, chronically ill, institutionalized adults.

This randomized clinical trial was designed to evaluate the effectiveness of an antifungal denture soaking solution (48 mL nystatin liquid, 100,000 IU/mL, dissolved in 432 mL of distilled water producing 10,000 IU nystatin/mL solution), used as an adjunct to a nystatin vaginal lozenge (100,000 IU/g, dissolved in the mouth three times daily for seven days) in a group of older, chronically ill, institutionalized adults.

Although the clinical signs and symptoms of oral candidiasis were resolved in all subjects following therapy, the presence of invasive *Candida* hyphae was detected in approximately 80 per cent of tissue and/or dentures. When compared to tap water, the use of an antifungal denture soaking solution produced no detectable difference in the presence of *Candida albicans* hyphae over a three-month period (M-H chi-square = 0.021, $p = 0.886$), but it did reduce the rate of recurrence of clinical signs and

symptoms. The appropriateness of this regimen for the treatment of oral candidiasis in this type of patient is challenged.

Key Words: Oral *Candida albicans*, nystatin, treatment, prevention.

SOMMAIRE

Les implants chirurgicaux immédiats constituent un moyen commode de remplacer les dents qui manquent sans exiger la réduction des tissus durs pour les piliers des prothèses partielles fixes sans restaurations éventuelles. Bien que la procédure soit «prévisible», dit-on, il se produit parfois des complications et des défauts. Dans cet article, on présente quatre cas d'implants immédiats ayant présenté des complications, on en décrit la gestion et on commente les causes possibles de ces fâcheux résultats.

Une planification préopératoire soignée, une bonne technique chirurgicale et une bonne gestion postopératoire, une pression convenable exercée en temps opportun et une hygiène méticuleuse peuvent aider à minimiser les complications et les défauts de ces implants.

On doit donner au patient sur le point de recevoir un implant im-

mediat des renseignements suffisants pour obtenir de sa part un consentement éclairé. C'est pourquoi il faut au moins lui expliquer la procédure dans des mots qu'il puisse comprendre, lui indiquer les risques et les complications possibles et bien l'informer des autres thérapies disponibles.

Introduction

Oral candidiasis is an opportunistic, mycotic infection. Normally it presents as a localized acute or chronic superficial infection that produces a number of characteristic signs and symptoms. These include a generalized sore mouth, bad taste, inflamed oral mucosa leukoplakia, and/or painful cracking at the corners of the mouth (angular cheilitis).

An oral *Candida albicans* infection, while troublesome, is usually not life-threatening. It typically results in significant patient discomfort, however, and the organism does have the capacity to produce a sudden severe (and possibly fatal) blood infection.^{1,2}

Candida albicans is a commensal organism within the oral environment. Nevertheless, its infectious capability can be precipitated by many predisposing systemic factors

JOURNAL

March/
Mars
1995
Vol. 61
No. 3

including physical disability, endocrine disorders (most commonly diabetes), immunosuppression due to disease and/or immunosuppressive drugs, and the use of broad-spectrum antibiotics.^{2,3} Local predisposing factors are uncommon, but most oral fungal infections occur in patients who wear complete dentures.

Reports on the frequency of occurrence of oral candidiasis are inconsistent. In fact, prevalence studies have reported occurrences from 3.0 to 77 per cent, depending on the presence of associated predisposing factors.⁴

Most infected patients (40 to 70 per cent) suffer from stomatitis as a direct result of their *Candida albicans* infection.⁵ In some patients, the entire alimentary tract may be colonized by yeasts.⁶

Diagnostic tests are now available to confirm a clinical diagnosis of candidiasis. Both the imprint technique⁷ and the replica technique^{5,8} are recognized methods for detecting the presence of *Candida* intraorally, and are approximately 78 per cent reliable as diagnostic indicators.⁴

Other, more sophisticated diagnostic techniques, including the application of immunologic markers such as immuno-fluorescence (based on antibody recognition) and DNA probes to clinical samples, are also available. However, while the latter tests are highly accurate, increased cost and time requirements rule out their general usefulness.

The "golden standard" method for *Candida* detection involves the use of cytological smears taken from the soft tissues. In this test, the organisms are identified histologically using light microscopy. Positive identification of clinical disease is indicated by the presence of pseudohyphae as opposed to the spores, which are characteristic of the subclinical, commensal state. Sample collection may be achieved using cotton swabs, a small brush, saliva, agar impressions or paper points for crevicular fluid.⁹

There is a demonstrable association between long-term denture use and the development of chronic, atrophic candidiasis. A

clinical infection of candidiasis has been demonstrated in at least 38 per cent of denture wearers, and there is evidence that *Candida albicans* may also exist in a subclinical "carrier" state.⁷ The results of recent cross-sectional studies reaffirm the long-standing contention that complete dentures play a two-fold role with regards to creating a predisposition to candidiasis. First, they serve as a catalyst to the initiation of chronic atrophic candidiasis. This is due to the decreased saliva flow and lower pH values that occur under complete dentures. Second, dentures act as a "reservoir" for the organisms, thereby augmenting their infective potential and aggravating an already existing condition.²

Oral yeast infection is particularly prevalent in patients who wear dentures continuously, both day and night, and those who are chronically ill, requiring medication for infections or immunosuppression. Epstein et al¹⁰ noted that radiation-therapy patients who reduce their use of dentures have lower rates of colonization by *Candida*.

It is hypothesized that the yeasts that normally inhabit the oral cavity are transferred to the inside of the denture by contact. If the denture is not disinfected, these yeasts can subsequently reinfect the soft tissues whenever the denture is reinserted in the mouth. This sets up a cycle that is clearly undesirable and could produce a high rate of recurrence.

Intuitively, it makes sense to prescribe a denture disinfecting solution at the same time that topical antifungal medication is prescribed.

Several common topical antifungal agents (e.g. nystatin, chlorhexidine) have been suggested for use as denture cleansing solutions.¹¹⁻¹³ The results obtained using nystatin as a disinfecting solution are variable because of differences in pharmaceutical formulations or compliance. Chlorhexidine, by comparison, has been shown to have potent antifungal properties.

Somewhat less widely used is the use of other chemicals, including weaker acids (e.g. dilute aque-

ous HCl, H₃PO₄). In fact, these chemicals are generally contraindicated due to their corrosive action on metal partial-denture frameworks.^{11,14} Similarly, peroxides may be effective antifungal agents, but could cause bleaching of the acrylic denture.¹⁴ Ultrasonic vibration is also useful, but only as an adjunct to chemical disinfection. It is also important to note that oral hygiene is consistently cited as the major factor in preventing intraoral fungus infections.^{2,14,15}

The purpose of this study was to evaluate the effectiveness of an antifungal denture soaking solution as an adjunct to conventional topical antifungal treatment for medically compromised, institutionalized, older adults with a clinically diagnosed *Candida albicans* infection.

Methods and Materials

The target population included all patients residing in Parkwood Hospital — a 650-bed chronic care institution located in London, Ontario — who wore a complete upper denture and had been diagnosed as having the clinical signs and symptoms of oral candidiasis. To be included in the study, a patient must present with both a complaint of generalized sore mouth and either redness of or a white plaque on the tissue under the denture.

Two cytology samples were taken from each subject. The first sample was obtained by gently scraping the mucosa on the entire hard palate and adjacent alveolar areas with a sterile proxy brush. A corresponding second sample was taken from the tissue surface of the complete maxillary denture. All samples were smeared on glass slides and sprayed with fixative. Each slide was marked with the patient's identification number and the sample site. Slides were stained using the periodic acid-Schiff stain (PAS) method to disclose the fungal organisms.

Subjects who had a positive smear for both the palatal tissue and the upper denture were categorized by sex and age (greater or less than 70 years of age). Each subject was then randomly as-



The Canadian Dental Association Taking Care of Business



“Developed in partnership with CDA by ExperDent Consultants.”



See next page for more details...

Over two years in development by the Canadian Dental Association in partnership with ExperDent Consultants, **Taking Care of Business** is the most extensive project in practice management that the CDA has ever undertaken. We went to the experts in Canadian dental practice management to bring you the most up-to-date and thorough practice management materials available anywhere in North America!

- Why practice value is important
- Understanding your practice's potential
- How to develop a financial plan
- Examining your break even point
- Patient management & recall strategies
- Case management & treatment acceptance
- Collections & payment control techniques
- **260 pages plus worksheets and cassettes**

- Key management areas for dentists
- Why growth stops for most dentists
- Transition choices for new dentists
- Negotiating successful associateships
- Designing and building a dental practice
- Compensation plans for associates
- Factors in sale/purchase transactions
- **300 pages plus cassettes**

- The dental career cycle
- Factors in retirement planning
- Starting a new practice
- Negotiating successful partnerships
- Key factors in legal agreements
- Practice valuation methods
- Managing staff & patients during transitions

- Preventing costly mistakes
- Why computerizing is important
- Review of the basics
- How to evaluate the options
- Understanding operating system environments
- Evaluating support and maintenance
- **150 pages plus worksheets**

- Uncovering hidden costs
- How to choose a vendor
- Learn about purchase contracts
- Hardware & software needs
- Installation and training
- Getting comfortable with the language

Mail or fax order form and payment to: **Canadian Dental Association,**
Member Services, 1815 Alta Vista Drive, Ottawa, ON, K1G 3Y6
Order today! Call CDA toll-free 1-800-267-6354 or fax 1-613-523-7736.
Please allow 8 weeks for delivery.

TOTAL \$

Member	Regular	Total
\$200	\$300	
\$150	\$250	
\$140	\$190	

Shipping & Handling
 per volume ordered

Subtotal

al (#R106845209)

total (Ontario only)

TOTAL \$

Table 1

Life-Table Analysis Of Presence Of Candida Albicans Hyphae In Cytological Smears Of Tissues and/or Complete Dentures Over a Three-Month Observation Period Following Treatment

Interval	Candida Hyphae	Nystatin Group	Tapwater Group	Total
7 days	Absent	2	2	4
	Present	8	7	15
	Total	10	9	19
30 days	Absent	0	0	0
	Present	7	5	12
	Total	7	5	12
90 days	Absent	1	0	1
	Present	5	2	7
	Total	6	2	8

Mantel-Haenszel Chi-square = 0.021; p value = 0.886

signed to either a control or treatment group, after verification that he or she was not allergic to the drug. The control group used tap water as a denture soaking solution, while the treatment group used 48 mL nystatin liquid (100,000 IU/mL) dissolved in 432 mL of distilled water. Both groups were prescribed nystatin vaginal lozenges (100,000 IU/g), with one lozenge to be dissolved in the mouth three times daily for seven days. This treatment period was selected because it represents the minimal amount of time required for the resolution of clinical signs and symptoms.^{2,12} The supplementary use of a denture soaking solution was expected to facilitate effective treatment within this time. Smears were taken of the subjects' hard palate and the inside of the upper denture again after one week, four weeks, and 12 weeks. Subjects were enrolled in the study continuously.

The denture soaking solutions were used for the same seven-day period as the nystatin lozenges, and were dispensed in amber colored glass bottles identified only as A or B. Each subject was given identical instructions on how to use the soaking solution. Instructions were given to remove the maxillary denture from the mouth and soak it overnight in the solution following a thorough brushing with soap and water. Where both

upper and lower dentures were present, the same procedure was used for both dentures. The solutions were changed every 48 hours by the nursing staff, and the dentures were rinsed with water before re-insertion in the mouth.

The outcome variable of interest was the presence or absence of the hyphae form of *Candida albicans* in the cytological smears taken from either the soft tissue of the edentulous upper arch or the tissue surface of the complete upper denture, or both, as determined by microscopic histological analysis. The presence of even a few of the hyphae form of *Candida* was considered to be a positive smear, while the complete absence of the hyphae form constituted a negative smear.

Data were analyzed using a life-table approach for categorical data and the Mantel-Haenszel chi-square statistical test.¹⁶

Results

Twenty-three subjects were recruited for the study. Four subjects (17.4 per cent) did not produce a positive smear test for the hyphae form of *Candida albicans* on either the hard palate or the upper denture at baseline, despite the presence of clinical signs and symptoms of candidiasis, and were excluded. The remaining 19 subjects were entered into the study.

Ten subjects were assigned to the test group and nine were assigned to the control group.

All but one of the subjects who entered into the trial were male. No differences were found between the study groups related to subject age, use of antibiotics prior to or during the trial, antifungal therapy regime, or concomitant corticosteroid use.

Clinical signs and symptoms were cleared up in all subjects after seven days. Two subjects in the nystatin group and one subject in the tap water group had a recurrence of their clinical signs and symptoms at the 30-day examination, and one subject in the nystatin group had a recurrence of clinical symptoms at 90 days.

The results of a life-table analysis on the effect of treatment on the presence of the hyphae form of *Candida albicans* are shown in **Table 1**. These data indicate that the use of nystatin as a denture soaking solution, when combined with the traditional treatment of nystatin topical antifungal lozenges, resulted in a 20 per cent reduction in the occurrence of positive smears after seven days compared to a 22.2 per cent reduction in occurrence among the subjects who used tap water. During the next three weeks, all subjects in both groups had positive smears for *Candida albicans* hyphae. Over the next two months, one subject

in the tap water group exhibited negative smears for *Candida albicans* hyphae. The difference between test and control groups in the rate of positive smears for *Candida albicans* over the three-month observation period was not statistically significant (M-H chi-square = 0.021, $p = 0.886$).

Following a seven-day course of topical antifungal treatment, the probability of a subsequent positive smear being exhibited during the three-month observation period was 0.66 for the nystatin group and 0.78 for the tap water group. No significant association was found between the presence of the hyphae form of *Candida* on the tissues of the edentulous maxillary arch and the tissue surface of the corresponding upper denture after seven days of treatment.

Discussion

Candida albicans can assume two morphologic forms. The "hyphae" form can invade epithelial tissues, while the commensal "spore" form is much more common and not invasive. The presence of only a few hyphae forms (as opposed to many hyphae forms) was considered indicative of disease. This approach seemed reasonable in the absence of a useful guideline on how many hyphae constitute an infection.

When data were analyzed using the presence of "a few" vs. "many" hyphae forms as the definition of a positive cytological smear, the overall results were essentially unchanged. A positive result in the cytological smear was determined to be the presence of the hyphae form of *Candida* from either the tissue or the upper denture, but not necessarily both. *Candida* hyphae can lie deep in the epithelial tissue and are not necessarily transferred to the denture. Also, the epithelial cells can exfoliate at an accelerated rate and adhere to the denture when it is removed, but not remain on the epithelial surface. Therefore, finding no correlation between the presence of hyphae in tissue smears and the corresponding denture surface was not necessarily unexpected or unusual.

It was assumed in this study that the presence of the hyphae form of *Candida albicans* on the denture surface meant that the organism was viable, but the viability of the organisms was not tested by culturing. Under the microscope, "dead" *Candida* hyphae in smears from the oral cavity can be distinguished from live hyphae because they are usually encrusted with microorganisms. With dentures, the hyphae form may be present, but it could be inactive. As such, it would not be a source of infection for the adjacent epithelial tissues. Failing to determine the viability of hyphae from dentures could have affected the results by inflating the number of false positive readings.

A life-table approach was chosen for the statistical analysis, as treatment duration is an important clinical consideration. As it turned out, the use of a statistical test was unnecessary, because it is obvious that there is no difference between the study groups with respect to the use of a nystatin denture soaking solution. Although the sample size was small, it was large enough to detect an intergroup difference at least as large as 45 per cent with a power of 70 per cent and a alpha level of 0.05.¹⁷ Such a large effect size, in retrospect, is perhaps unreasonably large and much larger samples in future studies will be required to detect smaller differences in the presence/absence of oral candida hyphae related to the supplemental use of denture soaking solutions. An effect size of at least 25 per cent, however, would be required to provide a clinically significant difference and justify the increased costs and care associated with the use of a denture soaking solution.

Although the medication and length of treatment prescribed resolved the clinical signs and symptoms of oral candidiasis, this regimen did not remove the causative agent. It is often presumed, perhaps wrongly, that the causative agent is eliminated along with the resolution of the clinical signs and symptoms.

Several explanations are plausible. The study population was comprised of chronically ill, older, institutionalized adults and com-

pliance with the regimen of medication may have been less than ideal both from the standpoint of administration of the drug as well as dissolving the lozenge in the mouth as directed. Also, a seven day course of antifungal treatment may be inadequate to eradicate oral candida hyphae. It is also possible that both of these situations could coexist.

An alternative approach to the treatment of oral candidiasis in older, chronically ill, institutionalized adults is, therefore, indicated. Antifungal medication could be administered systemically (fluconazole, ketoconazole) rather than topically which would avoid the problem of patient compliance due to mental and/or physical limitations. But systemic antifungals are contraindicated for patients with hypersensitivity to these drugs, those with renal or hepatic disease and those taking oral anticoagulants.¹⁸ Unfortunately, these conditions are common among chronically ill, older, institutionalized adults.

If systemic administration is contraindicated, the method of topical application, the drug selected and the length of administration need to be re-evaluated. For instance, chlorhexidine, when administered as a spray, may be a more appropriate choice of drug because it has superior substantivity (ability to bind to the tissues thereby remaining biologically active for a longer period of time).

It has also been suggested that nystatin antifungal in paste or ointment form be placed directly on the tissue side of the denture or incorporated into soft lining materials as an alternative delivery method.¹⁹ This might work well for the resolution of denture stomatitis but may not be as effective for candida infections involving other areas of the mouth. Although this procedure has intuitive appeal, there have been no clinical studies conducted to test its effectiveness.

A sustained delivery device in the form of a laquer containing an antifungal drug which is painted on the tissue surface of the denture looks promising.¹⁵ Seven days may be too short a period for the drug to be fully effective and a longer

period may be necessary. Two weeks may be a reasonable compromise realizing that, with these patients, maximum efficacy is seldom realized due to an abundance of management problems which negatively impact on strict compliance with drug administration. A 14-day course of treatment is now recommended in drug references; however, there are no data to support the extended period of therapy relative to the eradication of candida hyphae.²⁰

Although a nystatin denture soaking solution was not shown to provide any additional benefit in this study, the procedure itself continues to have intuitive appeal as an adjunct to topical or systemic antifungal therapy. The period of denture soaking should be extended for at least as long as the antifungal medication is prescribed and perhaps indefinitely for this population. On a cost/benefit basis, an alternative denture soaking agent such as chlorhexidine or peroxide should be considered. ■

Acknowledgements: This research was funded by a Medical Research Council summer student research award. The authors thank the members of the pharmacy and dental departments of Parkwood Hospital, London, Ontario, for their valuable assistance with this study. The valuable advice of Dr. George Wysocki, chair, division of oral pathology, department of pathology, faculty of medicine, at the University of Western Ontario, is also gratefully acknowledged.

Dr. D.W. Banting is a professor in the division of community dentistry, faculty of dentistry, at the University of Western Ontario, and chief of dental staff at Parkwood Hospital, London, Ontario.

Dr. P.A. Greenhorn is a staff dentist at Parkwood Hospital in London, Ontario.

Janice McMinn is a second year student in the faculty of dentistry, the University of Western Ontario, London, Ontario, Canada

Reprint requests to: Dr. D.W. Banting, Faculty of Dentistry, London, ON N6A 5C1.

References

1. Dreizen, S. Oral Candidiasis. *Am J Med* 77:28-33, 1984.
2. Budtz-Jorgensen, E. Etiology, pathogenesis, therapy, and prophylaxis of oral

yeast infections. *Acta Odontol Scand* 48:61-69, 1990.

3. Iacopino, A.M. and Wathen, W.F. Oral candidal infection and denture stomatitis: A comprehensive review. *JADA* 123:46-51, 1992.

4. Cumming, C.G., Wight, C., Blackwell, C.I. et al. Denture stomatitis in the elderly. *Oral Microbiol Immunol* 5:82-85, 1990.

5. Santarpia, III R.P., Pollock, J.J., Renner, R.P. et al. An *in vivo* replica method for the site-specific detection of *Candida albicans* on the denture surface in denture stomatitis patients: Correlation with clinical disease. *J Prosthet Dent* 63:437-443, 1990.

6. Narhi, T.O., Ainamo, A. and Meurman, J.H. Salivary yeasts, saliva, and oral mucosa in the elderly. *J Dent Res* 72:1009-1014, 1993.

7. Wilkieson, C., Samaranayake, L.P., MacFarlane, T.W. et al. Oral candidosis in the elderly in long-term hospital care. *J Oral Pathol Med* 20:13-16, 1991.

8. Spiechowicz, E., Renner, R.P., Pollock, J.J. et al. Sensitivity of the replica method in the detection of candidal infection among denture wearers with clinically healthy oral mucosa. *Quintessence Int* 22:753-755, 1991.

9. Olsen, I. and Stenderup, A. Clinical-mycologic diagnosis of oral yeast infections. *Acta Odontol Scand* 48:11-18, 1990.

10. Epstein, J.B., Freilich, M.M. and Le, N.D. Risk factors for oropharyngeal candidiasis in patients who receive radiation therapy for malignant conditions of the head and neck. *Oral Surg Oral Med Oral Pathol* 76:169-174, 1993.

11. Spiechowicz, E., Santarpia, III R.P., Pollock, J.J. et al. *In vitro* study on the inhibiting effect of different agents on the growth of *Candida albicans* on acrylic resin surfaces. *Quintessence Int* 21:35-40, 1990.

12. Martin, M.V., Farrelly, P.J. and Hardy, P. An investigation of the efficacy of nystatin for the treatment of chronic atrophic candidiasis (denture sore mouth). *Br Dent J* 160:201-204, 1986.

13. Lal, K., Santarpia, III R.P., Pollock, J.J. et al. Assessment of antimicrobial treatment of denture stomatitis using an *in vivo* replica model system: Therapeutic efficacy of an oral rinse. *J Prosthet Dent* 67:72-77, 1992.

14. Budtz-Jorgensen, E. Materials and methods for cleaning dentures. *J Prosthet Dent* 42:619-623, 1979.

15. Lombardi, T. and Budtz-Jorgensen, E. Treatment of denture-induced stomatitis — a review. *Eur J Prosthodont Restor Dent* 2:17-22, 1993.

16. Fleiss, J.L. *Statistical Methods For Rates and Proportions* second edition. New York: Wiley & Sons, 1981, p 173.

17. Lipsey, M.W. *Design Sensitivity*. Thousand Oaks: Sage Publications, 1990, pp 69-89.

18. Gage, T.W. and Pickett, F.A. *Dental Drug Reference*. St Louis: Mosby, 1994, pp. 157-210.

19. Carter, G.M., Kerr, M.A. and Shepherd, M.G. The rational management of oral candidiasis associated with dentures. *N Z Dent J* 82:81-84, 1986.

20. Gage, T.W. and Pickett, F.A. *Dental Drug Reference*. St Louis: Mosby, 1994, p. 284.

Building Futures On Friendship BE A BIG BROTHER OR SISTER



BIG BROTHERS OF CANADA
LES GRANDS FRÈRES DU CANADA

For further information, contact
Big Brothers of Canada
at

1-800-263-9133

JOURNAL

March/
Mars
1995
Vol. 61
No. 3

RATED #1 IN THEIR CLASS.

Dental Advisor's latest survey on amalgam alloys rated every product in the Valiant® line at the very top... right where they've been for 20 years. Not only do

Valiant® amalgams offer superior strength and handling characteristics, but the patented Sure-Cap® system assures safe handling, too. Now the full line of Valiant® amalgams — including palladium enriched Valiant®, Valiant® Ph.D.® and Valiant® Snap-Set™ — is available through your local dealer from Ivoclar Vivadent. Ideal for use with our Silamat® and Silamat® Plus amalgamators.



VALIANT

IVOCLAR VIVADENT
IVOCLAR NORTH AMERICA, INC.

For information on this or any other products in our system, call us toll free at 1-800-5-DENTAL in the U.S., 1-800-263-8182 in Canada.

CLINICAL



Submerged Versus Non-Submerged Dental Implants: A Comparison

S. Saba, B.Sc., DDS, Cert. Pros.

The clinical success of osseointegrated implants, originally demonstrated by Brånemark, has been shown to occur with different implant systems.¹⁻³ To achieve osseointegration, however, several prerequisites must be fulfilled.

Brånemark et al⁴⁻⁶ required submerged implant placement, underneath the mucosa, to avoid infection and epithelial downgrowth, and to provide an environment for osseointegration without loading forces on the implant. In contrast, ITI (International Team for Oral Implantology) implants (Institut Straumann AG, Waldenburg, Switzerland) have always been characterized by a non-submerged design, placed with a one-stage surgical procedure.⁷ Experimental and clinical trials in the past 20 years have clearly shown that these one-stage titanium implants also achieve osseointegration with high predictability.⁸⁻¹¹

The purpose of this paper is to introduce the concept of non-submerged implants (as represented by the ITI Implant System), and to compare it to the standard submerged implant systems.

Non-submerged implants require only one surgical procedure for placement and preparation for abutment connection.¹² The superior extent of the implant body extends through the mucosa and is accessible via a cover (closure) screw from the first day the im-

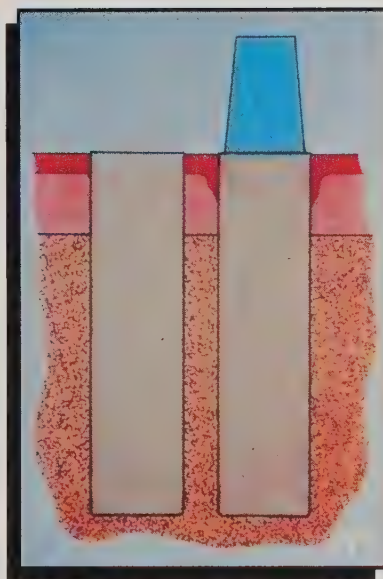


Fig. 1: Diagrammatic representation of implant position in reference to epithelium, connective and osseous tissue.

plant is placed, eliminating the need for a second surgery, three to six months later, to expose the implant body and connect the abutment. Soft tissue healing and maturation occur from the time of first surgery, thus tissue adaptation and the amount of keratinized tissue are improved (**Fig. 1**).

With non-submerged implants, the abutment-implant connection occurs at or above the gingival crest (**Fig. 2**). Thus the interface between implant and abutment is not at a critical tissue location¹³ (i.e., bone crest or within soft tissue), and the weak link of the abutment-implant connection, an area

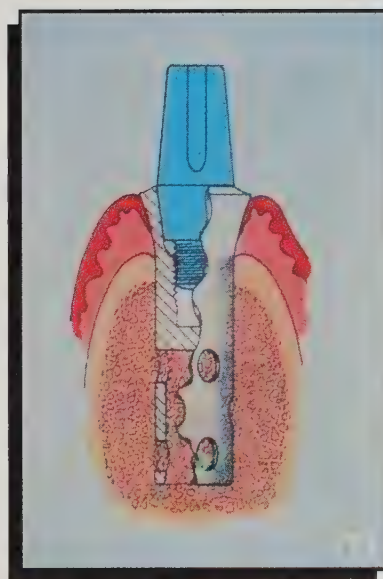


Fig. 2: Diagrammatic representation of implant-abutment connection at or above gingival crest.

of potential stress transmission and micromovement, does not occur at a vulnerable tissue level. This minimizes any soft tissue trauma or bone resorption due to load transfer. Also, because it is not necessary to countersink the crestal bone, a favorable crestal bone response can be anticipated. The abutment-implant interface is not the flat-top, externally-adapting abutment seen in many conventional submerged implant systems. Instead, it is internal fitting with a cone-to-screw interface that is four times as strong as only a screw interface, allowing for greater stability.

JOURNAL

March/
Mars
1995
Vol. 61
No. 3

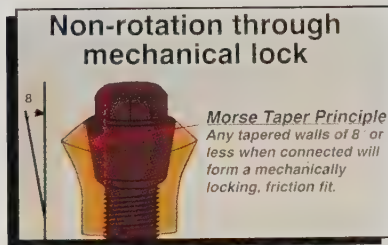


Fig. 3: Frictional fit enhances rotational stability.

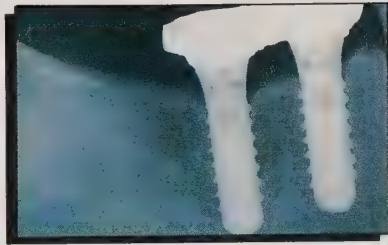


Fig. 6: Radiograph showing framework try-in for two-unit PFM bridge on ITI solid screw implants.

With non-submerged implants, the internal tapered implant walls allow the abutment to develop a non-rotation through a mechanical locking friction fit (**Fig. 3**). The interfacial gap of less than 10 μm and the precision fit prevent micromovement and microleakage, which could otherwise irritate peri-implant tissues (**Fig. 4**). The solid continuity of the non-submerged implant from bone to gingival crest allows a solid transmucosal zone, which also allows a more favorable lever arm.

The prosthetic-abutment connection of non-submerged ITI implant bodies is at gingival crest lev-

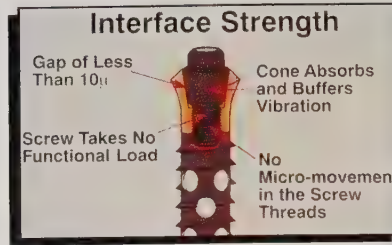


Fig. 4: Precision fit of abutment-implant relationship minimizes micromovement and microleakage.



Fig. 7: Delivery of two-unit PFM #35-36.

els. This allows the micro-gap between the abutment and restoration to be accessible to oral hygiene.¹⁴ It also affords good visibility, and allows the insertion and seating of the prosthesis to be simple (**Fig. 5**). The seating of prostheses with conventional external-hex submerged implant systems is usually complicated by the presence of blood, saliva, and extraneous tissue, making radiographic verification a must. Internal fitting components, with seating that can be confirmed orally, avoid the need for this radiographic verification of seating.

Loading implants prematurely during the osseointegration period

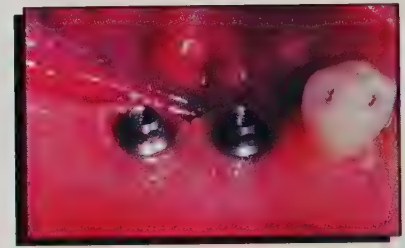


Fig. 5: Two months post-provisional insertion. Tissue developing scalloped contour from emergence profile of provisional restoration for ideal esthetics. Note that seating to implant counter-bevel is simple and visibility good.

generates a potential hazard to this process.¹⁵ Some say that it causes "retrograde peri-implantitis,"¹⁶ which has been described as microfractures in bone due to overloading or premature loading, with resultant crestal bone loss or, worse, loss of osseointegration. Submerged implants are protected during this period. It is more difficult to protect non-submerged implants from stress during this period, however, as they are penetrating through the oral mucosa.¹⁷

Studies have shown¹⁸⁻²⁰ desirable bone response to non-submerged implants, with success rates as good as those for submerged implant systems. With non-submerged implants, the oral micro-flora becomes a significant variable in the success of osseointegration during this period.^{21,22} The composition of the oral micro-flora and health of the adjacent gingiva have a great impact on

TABLE I

Submerged versus non-submerged implants

Non-submerged (ITI) implants	
Advantages	Disadvantages
One surgical procedure.	Protection from premature loading more difficult.
Post-surgical tissue recession minimized.	Oral microflora, a variable during osseointegration.
Load handling and force distribution.	Esthetic control more challenging.
Seating of suprastructure.	Customizing emergence from tissue limited.
Microgap of abutment/fixture above vulnerable tissue.	
Gingival seal formed early on, and not disturbed after implant placed.	
Requirement of a closed healing environment not necessary for osseointegration.	
Countersinking crestal bone not necessary.	

peri-implant healing and the quality of osseointegration.

One limitation of non-submerged implants is esthetic control. This is more difficult, since implant location and tissue height are decided early. The opportunity to customize emergence from tissue is limited, more specifically in anterior cases. The ITI system provides a 15-degree pre-angulated implant body to help compensate for angulation difficulties. In the posterior region, the 5.0 mm diameter of the ITI head allows an improved gingival divergence for posterior molar restorations (Figs. 6 and 7).

In conclusion, the ITI non-submerged implant design provides some distinct advantages from a surgical and prosthetic point of view (Table I). ■

Acknowledgements: The author wishes to thank Dr. Franz Sutter, and Mr. Gary Jones of Straumann Canada for their assistance in assembling the slides used to illustrate this paper.

Dr. Saba is engaged in the private practice of prosthodontics in Montreal.

Reprint requests to: Dr. S. Saba, Seaforth Medical Building, Suite 240, Montreal, Que. H3H 1V4.

References

1. Brånemark, P.-I., Breine, U., Adell, R. et al. Intra-osseous anchorage of dental prostheses. *Scand J Plast Reconstr Surg* 3:81-100, 1969.
2. Schroeder, A., van der Zypen, E., Stich, H. et al. The reaction of bone, connective tissue and epithelium to endosteal implants with titanium sprayed surfaces. *J Maxillofac Surg* 9:15-25, 1981.
3. McKinney, R.V. and Koth, D.L. The single-crystal sapphire endosteal dental implant. *J Prosthet Dent* 47:69-84, 1982.
4. Brånemark, P.-I., Zarb, G.A. and Albrektsson, T. (eds). *Tissue Integrated Prostheses: Osseointegration in Clinical Dentistry*. Chicago, Quintessence Publishing Co., 1985.
5. Albrektsson, T., Zarb, G., Worthington, P. et al. The long-term efficacy of currently used dental implants. A review of proposed criteria of success. *Int J Oral Maxillofac Implants* 1:11-25, 1986.
6. Albrektsson, T. and Sennerby, L. Direct bone anchorage of oral implants. Clinical and experimental considerations of the concept of osseointegration. *Int J Prosthodont* 3:30-41, 1990.
7. Buser, D., Weber, H.P. and Bragger, U. The treatment of partially edentulous patients with ITI hollow-screw implants: Presurgical evaluation and surgical procedures. *Int J Oral Maxillofac Implants* 5:165-174, 1990.
8. Babbush, C.A., Kent, J.N. and Misiek, D.J. Titanium plasma sprayed (TPS) screw implants for the reconstruction of the edentulous mandible. *J Oral Maxillofac Surg* 44:274-282, 1986.
9. Sutter, F., Schroeder, A. and Buser, D. The new concept of ITI hollow-cylinder and hollow-screw implants. Part 2. Clinical aspects, indications and early clinical results. *Int J Oral Maxillofac Implants* 3:173-181, 1988.
10. Buser, D., Weber, H.P. and Lang, N.P. Tissue integration of non-submerged implants. Results of a prospective study with 100 ITI hollow-screw and hollow-cylinder implants. *Clin Oral Impl Res* 1:33-40, 1990.
11. ten Bruggenkate, C.M., Muller, K. and Oosterbeek, H.S. Clinical evaluation of the ITI hollow-cylinder implant. *Oral Surg* 44:274-282, 1990.
12. Sutter, F., Schroeder, A. and Buser, D. The new concept of ITI hollow-cylinder and hollow-screw implants: Part 1. Engineering and design. *Int J Oral Maxillofac Implants* 3:161-172, 1988.
13. Buser, D., Weber, H. and Lang, N. Tissue integration of non-submerged ITI benefit implants. *J Dent Res* 69:Special Issue, 1990.
14. Schnitman, P.A. and Shulman, L.B. Recommendations of the consensus development conference on dental implants. *JADA* 98:373-377, 1979.
15. Brunski, J.B. Biomechanics of oral implants: Future research directions. *J Dent Educ* 52:775-787, 1988.
16. Meffert, Roland M. Personal communications, 1992.
17. Sagara, M., Akagawa, Y., Nikai, H. et al. The effects of early occlusal loading on one stage titanium alloy implants in beagle dogs: A pilot study. *J Prosthet Dent* 69:281-288, 1993.
18. Babbush, C.A., Salon, J.M. et al. Prosthetic and laboratory procedures for the titanium plasma sprayed (TPS) screw implant system. *J Oral Implantol* 23:85-100, 1987.
19. Babbush, C.A. and Kent, J.N. A solution for the problematic atrophic mandible. The titanium spray screw implant. *Gerodontology* 2:16-20, 1986.
20. Davis, D. The role of implants in the treatment of the edentulous mandible. *Int J Prosthodont* 3:42-50, 1990.
21. Listgarten, M.A., Lang, N.P., Schroeder, H.E. et al. Periodontal tissues and their counterparts around endosseous implants. *Clin Oral Impl Res* 2:1-19, 1991.
22. Mombelli, A., van Oosten, M.A. et al. The microbiota associated with successful or failing osseointegrated implants. *Oral Microbiol Immunol* 2:145-151, 1987.

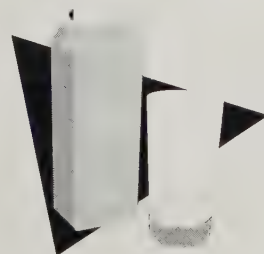
DID YOU KNOW?

Drink Much?

On a typical day, the average Canadian consumes eight drinks. Each drink is about 225 mL or eight ounces. We typically consume two drinks of water (16 ounces); 1.5 (12 ounces) of coffee; 1.25 (10 ounces) of both milk and juice; 0.75 (6 ounces) of other drinks, both soft drinks and tea; and 1/2 drink (4 ounces) of either wine or spirits.

Milk is consumed on a daily basis by six out of 10 people. However, one person in five drinks no milk whatsoever. With increasing age, the number of individuals who drink milk daily steadily decreases - 83 per cent of those under 20 years of age drink milk daily versus only 38 per cent of those over 40. Whatever their age, males drink more milk than females. Children under six years drink the most milk per day, 24 ounces, and adults over 50 drink the least, four ounces.

(Source: Nutrition Notes. News Canada, January 1995)



JOURNAL

March/
Mars
1995
Vol. 61
No. 3

[illegible]

Thank You, Thank You, Thank You,
Thank You, Thank You, Thank You, Thank

Convention UPDATE



OTTAWA 1995
August 26 - 29

Peak Learning For You & Your Team



The 1995 Organizing Committee is extremely proud of the roster of speakers who will participate in the next CDA Convention taking place in Ottawa from August 26th - 29th, 1995. From the cornucopia of courses and lectures that these clinicians have put together, each member of the dental team is sure to find subjects of particular interest both before and during the Convention proper.

On Monday, August 28th and Tuesday, August 29th, we leave very few subjects in dentistry untouched. Your registration to the Convention entitles you to attend **over forty lectures FREE OF CHARGE** — an amazing number of free lectures from which to choose!

Whether you are fresh out of school or you have been in practice a long time; whether you are a general practitioner or a specialist, you will find programs of interest to you. Not only will dentists, dental hygienists, dental assistants and office personnel be well served by the numerous sessions offered within the Scientific Program but we have also developed a number of lectures that spouses not involved in the dental field will find highly stimulating.

On Saturday and Sunday, August 26th and 27th, it is pre-convention time. You will have the opportunity to choose among **five limited attendance lectures and five hands-on courses** (there are more hands-on courses during the Convention). This is a time for serious learning!

Before the various activities that are scheduled during the convention proper start competing for your attention, you can really buckle down and give your full concentration to specific subjects that truly interest you. Although hands-on courses demand the most time and energy to put together, the members of the Organizing Committee felt that the exercise was worthwhile since it is widely accepted that small groups and an active participation approach foster the best environment for learning. Plan to attend with your spouse and the members of your team. You must register to attend pre-convention courses. Fill out the enclosed Registration Form and reserve your seat **NOW** so you won't be disappointed.

In addition, table clinics given by your peers on subjects in which they are most conversant are also an integral part of the Convention's Scientific Program. These table clinics are interesting in that they offer little nuggets that you can glean from someone who has delved in a specific area of dentistry.

The 1995 CDA Convention promises to fulfill your expectations when it comes to learning. Register **NOW** and take full advantage of what the meeting has to offer.

Ian McConnachie, D.D.S., M.S.
CDA 1995 Organizing Committee
Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario
K1G 3Y6

Tel.: 1-800-267-6354
Fax: (613) 523-3062



OTTAWA 1995

August 26 - 29

Hands-on Courses

The format of our hands-on courses invites a one-on-one approach with the instructor and with your peers. In a small group environment learning is optimal and personal interaction with the clinician is encouraged. You will utilize and sharpen your skills under the guidance of an expert clinician as you study indepth topics such as dental materials, root planing and scaling, emergency medicine, electrosurgery, implants, periodontal surgery and endodontics.

You will find below a list of the hands-on courses available at the CDA 1995 Convention and of the clinicians who are giving these courses. To register, see the enrolment form within the following blue pages of this issue of the *CDA Journal*.

Dental Materials for Dental Assistants



*Saturday, August 26
a.m. session*

ALAN A. BOGHOSIAN
D.D.S.
Chicago, IL

Implants: Basic Prosthetic Certification Course



*Sunday, August 27
a.m. session
Pre-requisite lecture
all-day Saturday*

JOHN COX
D.D.S., Dip. Pros., MSc.
Ottawa, ON

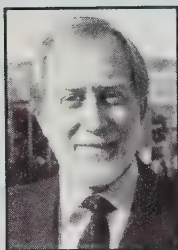
Root Planing and Scaling



*Saturday, August 26
a.m. session*

JAMES GRISDALE
D.D.S.
Vancouver, BC

Emergency Medicine in Dentistry



*Sunday, August 27
All-day session*

STANLEY F. MALAMED
D.D.S.
Los Angeles, CA

Periodontal Surgery for the General Practitioner



*Monday, August 28
All-day session*

DONALD ROLFS
D.D.S.
Union, WA

CPR — Basic Rescuer Level 'C' Certification Course

*Monday, August 28
All-day session*

ST. JOHN AMBULANCE

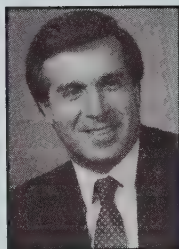
Advanced Concepts in Endodontics



*Tuesday, August 29
All-day session*

SALAM SAKKAL
D.M.D., M.S.
Montréal, QC

Electrosurgery



*Sunday, August 27
a.m. session*

JEFFREY A. SHERMAN
D.D.S.
Oakdale, NY

TABLE CLINIC PROGRAM

Looking for the latest research and the newest techniques for making your practice more successful or efficient? Our table clinic program has presentations for dentists, dental assistants and dental hygienists that cover a variety of topics in dentistry. Come and find out what's new in the practice of dentistry!

It's not too late for you to share your knowledge with your colleagues. If you would like to present a table clinic at the CDA '95 Convention, please call CDA Conventions at 1-800-267-6354 and speak to Laura Stephenson.

Limited Attendance Courses



OTTAWA 1995
August 26 - 29

The 1995 Organizing Committee has planned five stimulating limited attendance lectures to be presented during the pre-convention period. These small group settings are conducive to learning and enable delegates to openly participate in a less formal atmosphere. This interaction between clinician and audience has always proven quite beneficial. We have arranged seminars on contemporary topics such as esthetic restorative dentistry, periodontal disease, dental materials, financial independence and dental practice transitions.

Listed below are the limited attendance hands-on lectures currently scheduled for the CDA 1995 Convention. Seating is limited. To register, see the enrolment form within the following blue pages of this issue of the *CDA Journal*.

Achieving Financial Independence



*Sunday, August 27
a.m. session*

**W. CHARLES
BLAIR**
D.D.S.
Charlotte, NC

Dental Practice Transitions

*Sunday, August 27
p.m. session*

**W. CHARLES
BLAIR**
D.D.S.
Charlotte, NC

Contemporary Dental Materials and their Clinical Applications



*Sunday, August 27
All-day session*

**ALAN A.
BOGHOSIAN**
D.D.S.
Chicago, IL

Update on Esthetic Restorative Dentistry



*Saturday, August 26
All-day session*

**TERRY
DONOVAN**
D.D.S.
Los Angeles, CA

Periodontal Disease: What It Is and What We Can Do About It



*Sunday, August 27
All-day session*

**DONALD
ROLFS**
D.D.S.
Union, WA

LET'S PLAY BALL!

We have reserved some tickets to the triple A baseball game between the Ottawa Lynx (farm team to the Montreal Expos) and the Syracuse Chiefs (farm team to the Toronto Blue Jays) on Tuesday, August 29th. Game starts at 7:05 p.m.

If you are interested in obtaining tickets, please call 1-800-267-6354 and speak to Laura Stephenson.



OUR 1 + 2 CAMPAIGN SAVES

Remember that all CDA members who enroll before July 21, 1995 can register for FREE and every Canadian dentist who registers before this date can register two non-dentist staff members to the convention proper for free!

Don't delay, take advantage of this offer now.



OTTAWA 1995

August 26 - 29

General Scientific Lectures

Everyone registered for the Convention has access to the general scientific lectures. The Scientific Program is designed for the entire dental team. Some lectures are recommended for a specific area of expertise while others are created so that the whole dental team attends together. Topics range from communication and teamwork to pharmacology and pediatric dentistry. Every member of the dental team will have the opportunity to choose from a wide variety of topics available to them each day.

The following is our preliminary line-up of lectures. Refer to the *CDA Journal* on a monthly basis to keep updated on other lectures that may be added to the scientific program.

Problem Solving Techniques for the Dental Environment



**MARION
BALLA**

M.Ed., M.S.W.,
C.S.W.
Ottawa, ON

Overhead Control That Makes Cents



**W. CHARLES
BLAIR**

D.D.S.
Charlotte, NC

Post and Core: An Update



**PIERRE
BOUDRIAS**

D.M.D., M.S.D.
Montréal, QC

Dentotherapeutics



**SEBASTIAN G.
CIANCO**

D.D.S., Dip. Perio
Buffalo, NY

The PSR Program: Is Your Practice Up-to-date in Periodontics



**MICHEL
COUTURE**

D.M.D.,
Dip Perio
Montréal, QC

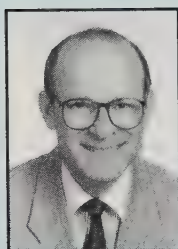
Pharmacological Update for the Dental Practitioner



**HAROLD L.
CROSSLEY**

D.D.S., Ph.D.
Baltimore, RI

Biological Considerations of Endodontic Innovative Techniques



**SHIMON
FRIEDMAN**

D.M.D.
Toronto, ON

MURRAY McDONALD LECTURE



**JANE
FULTON**

Ph.D., M.Sc.
Ottawa, ON

Controversies Surrounding Temporomandibular Disorder II



**HELEN
GRAD**

B.Sc.,
M.Sc. Phm.
Toronto, ON

Controversies Surrounding Temporomandibular Disorder I



**MIRIAM
GRUSHKA**

M.Sc., D.D.S.,
Ph.D.
Toronto, ON

Pulp Therapy in Pediatric Dentistry



**ROBERT
HENRY**

D.D.S., M.S.
San Antonio, TX

Teamwork & Success Go Hand In Hand



**ANITA
JUPP**

Burlington, ON

**State-of-the-Art Adhesive
Dentistry (Part I & II)**



**JOHN
KANCA**
D.M.D.
Middleburg, CT

**What's New
in Endodontics?**



**JOHN
KHADEMI**
D.D.S., M.S.
Los Angeles, CA

**Ups and Downs, Joys and
Griefs of Office Oral Surgery**



**MYER S.
LEONARD**
M.D., D.D.S.
Minneapolis, MN

**Trouble-Shooting the
Mandibular Block**



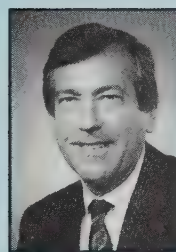
**STANLEY F.
MALAMED**
D.D.S.
Los Angeles, CA

**Nutrition in the Cause and
Prevention of Common Diseases**



**JOHN
MCDUGALL**
M.D.
Santa Rosa, CA

**Different Types
of Lasers**



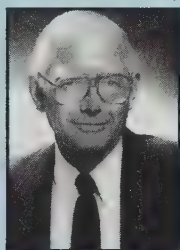
**TERRY D.
MYERS**
D.D.S.
Walled Lake, MI

**Computers in Dentistry
(Part I & II)**



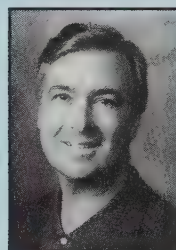
**JACK
PRESTON**
D.D.S.
Los Angeles, CA

**Current Concepts in the
Management of Adult Periodontitis
(Part I & II)**



**ROBERT
SCHALLHORN**
D.D.S., M.S.
Aurora, CO

**Recession Proof Your Practice:
Strategies for Minimizing the
Effects of Economic Downturn**



**CLYDE
SCHULTZ**
D.D.S.
San Francisco, CA

**JOHN
KHADEMI**
D.D.S., M.S.
Los Angeles, CA

**Regenerative
Periodontal Therapy**



**MARK M.
SPATZNER**
D.M.D.,
Dip. Perio
Westmount, QC

PLUS ...

Effective Communication
with Staff and Clients in the
Dental Environment

MARION BALLA
M.Ed., M.S.W., C.S.W.
Ottawa, ON

Dentotherapeutics
SEBASTIAN G. CIANCO
D.D.S., Dip. Perio
Buffalo, NY

Replantation of Teeth —
The Endodontic Perspective
SHIMON FRIEDMAN
D.M.D.
Toronto, ON

GRIEVE MEMORIAL
Behaviour Management for
Pediatric Dental Patients
ROBERT HENRY
D.D.S., M.S.
San Antonio, TX

Sharing a Common Vision for Changes
in Dentistry
ANITA JUPP
Burlington, ON

Osseointegration — Then and Now:
A 10 Year Retrospective Reviewing
the Impact of Osseointegration in
the Practice of Dentistry
SAM KUCEY
D.D.S., F.R.C.D.C., dip. ABOMS
Ottawa, ON

All The Medicine You Wanted
To Know Without Going to
Medical School
MYER S. LEONARD
M.D., D.D.S.
Minneapolis, MN

Abrasive Technology
Revisited 1995
TERRY D. MYERS
D.D.S.
Walled Lake, MI

Team Communication Strategies:
Building a Productive and
Secure Practice
CLYDE SCHULTZ
D.D.S.
San Francisco, CA

And More ...



OTTAWA 1995

August 26 - 29

CDA 1995 Out-of-Country Seminars

A wonderful opportunity to experience first hand how dentistry is practiced in different parts of the world. Choose a destination and, in addition to sightseeing, we'll arrange for you to visit dental clinics and dental practices. We'll set up meetings with members of the national dental association and offer lectures on areas of interest.

Whether you visit choose to Jerusalem, the City of Gold, ride an elephant in Jaipur, dance the night away to the sounds of lively Greek music, enjoy the adventure of shopping in a Turkish bazaar, or observe the wildlife on African reserves, CDA Out-of-Country Seminars let you appreciate the sights and sounds of each destination and benefit from professional exchanges with your colleagues in the country of your choice. (Tour descriptions are only highlights.)

— FDI 1995 — Hong Kong: Gateway to the Orient

The 83rd World Dental Congress, FDI 1995, will take place in bustling Hong Kong, universally recognised as the 'Gateway to the Orient'.

Jointly organized by the Hong Kong Dental Association and the World Dental Federation, the congress runs from October 23 to 27, 1995. The Congress itself will be held at the Hong Kong Convention and Exhibition Centre, on Hong Kong Island, overlooking Victoria Harbour.

If you attended FDI 1994 in Vancouver, you'll certainly want to repeat the experience. If not, then here is your chance to experience a meeting where dental profes-



sionals from around the world gather for the World Dental Congress. We have put together a package which comprises airfare plus 5 nights accommodation (with breakfast) in Hong Kong. Take in the sights of this vibrant city and attend a great convention.

Hong Kong's exotic locale presents exciting opportunities for tours and visits. For those of you

who want to combine FDI 1995 with a holiday in the Far East, we propose post-congress tours to Bali (October 26 - 30), China (October 26 - November 6), Bangkok and Singapore (October 26 - 31) and the Bunga Raya (Singapore, Malaysia and Bangkok — October 26 - November 5).

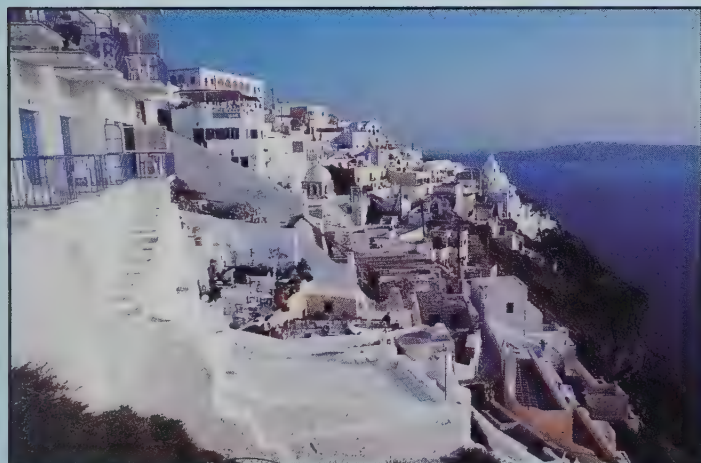


OTTAWA 1995
August 26 - 29



TURKEY (April 19 - May 2, 1995)

A trip that will take you to the great Byzantine Basilica built in the 6th century, the Blue Mosque (a 17th century Ottoman mosque) and the Hippodrome where chariot races and athletic events took place during the Roman Empire! Also visit the Topkapi Palace, the residence of Ottoman sultans housing the richness of 700 years of rule, with its Baccarat crystal chandeliers, persian carpets, priceless art and treasures. Turkey is home to a grand collection of art from many civilizations throughout the centuries. Enjoy the adventures of the Grand Bazaar and visit old cities such as Antalya and Pumukkale — where you can enjoy a swim in the hot spring pools!



GREECE (June 17 - July 1, 1995)

Enjoy visiting the city of Athens with a tour of the Acropolis. From Athens embark on a classical tour of Greece with visits to ancient Corinth and its museum, Epidaurus, Mycenae and Nauplia. In Olympia, visit the Sanctuary of Zeus, and the place where the Olympic Games had their origins. In Mykonos visit markets, beaches and enjoy fresh seafood and local entertainment. Get set also for a 4-day Greek Island Cruise with touring opportunities in Patmos, Kusadasi, Heraklion and the mountainous and beautiful Santorini.

KENYA (July 13 - 27, 1995)

Your safari begins at the Masai Mara Game Reserve, Kenya's richest reserve. Observe large free-roaming herds on the plains including the Big Five (Elephant, Lion, Leopard, Buffalo and Rhino). Also admire the Wildebeest, Gazelle and Zebra. At the Aberdare National Park visit The Ark, a unique lodge overlooking a large salt lick and waterhole that attracts wildlife both day and night. Enjoy the Samburu Reserve where the elephant, buffalo, cheetah, lion and leopard roam uninhibited. Be entertained by mischievous monkeys and watch sleeping crocodiles sun themselves at the river's edge.



**For more information on any of the above tours, contact Tourcan
at 1-800-263-2995 or CDA Conventions at 1-800-267-6354.**

CANADIAN DENTAL ASSOCIATION CONVENTION

Ottawa • August 26 - 29, 1995

GST Registration Number: R106845209

ONE FORM PER PERSON

PRE-REGISTRATION & HOTEL RESERVATION FORM • Please PRINT

To ensure that your requests are met — **please register early.** Advance registrations will be accepted until **July 21st, 1995** after which date forms will be returned to the sender. Each on-site registration will be subject to a \$30 administrative fee (GST included).

Check one: ☐ Dr. ☐ Mr. ☐ Ms.	Family Name		
	First Name	Sex: ☐ M ☐ F	
	Street address		
City		Province	Postal Code
Office Telephone ()		Home Telephone ()	Fax ()
CDA Membership Number		License Number	

LIMITED ATTENDANCE LECTURES

Saturday, August 26th —

Terry Donovan — Aesthetic/Restorative Dentistry — All-day lecture
Dentist \$ 135 _____
Dental Staff (non-dentist) \$ 65 _____

Sunday, August 27th —

W. Charles Blair — Achieving Financial Independence — Half-day lecture
Dentist (7% GST included) \$ 95 _____
Spouse (7% GST included) \$ 40 _____

W. Charles Blair — Dental Practice Transition — Half-day lecture
Dentist (7% GST included) \$ 95 _____
Spouse (7% GST included) \$ 40 _____

Donald Rolfs — Periodontal Disease — All-day lecture
Dentist \$ 135 _____
Dental Hygienist \$ 65 _____

Alan Boghosian — Dental Materials — All-day lecture
Dentist \$ 135 _____
Dental Staff (non-dentist) \$ 65 _____

HANDS-ON COURSES

Saturday, August 26th —

Alan A. Boghosian — Dental Materials — Half-day hands-on course
Dental Assistant (limited to 50 participants) \$ 95 _____

James Grisdale — Scaling & Root Planing — Half-day hands-on course
Dentist / Dental Hygienist (limited to 40 participants) \$ 115 _____

John Cox — Implants
1 1/2 DAY COURSE: SATURDAY AND SUNDAY (AM)
Dentist (limited to 50 participants) \$ 295 _____

Sunday, August 27th —

Stanley Malamed — Emergency Medicine in Dentistry — All-day hands-on course
Dentist/Staff (limited to 30 participants) \$ 295 _____

Jeffrey A. Sherman — Electrosurgery — Half-day hands-on course
Dentist (limited to 40 participants) \$ 115 _____

Monday, August 28th —

Donald Rolfs — Periodontal Surgery — All-day hands-on course
Dentist (limited to 40 participants) \$ 295 _____

St. John Ambulance — CPR — All-day hands-on Certification course \$ 35 _____

Tuesday, August 29th —

Salam Sakkal — Advanced Endodontics — All-day hands-on course
Dentist (limited to 40 participants) \$ 195 _____

GST is included in the Limited Attendance Practice Management courses. GST is not charged on Limited Attendance and Hands-on scientific courses. Lunch is included in all-day Limited Attendance and Hands-on courses (except for CPR).

CONVENTION

Choose only one delegate type. 1 registrant per form.

☐ **Dentist**
Member of CDA \$ Nil _____
Non-member of CDA (7% GST included) \$ 175 _____

☐ **Spouse** (7% GST included) \$ 98 _____

☐ **Dental Hygienist** (7% GST included) \$ 98 _____
Dental Hygienist (See note below)* \$ Nil _____

☐ **Dental Assistant** (7% GST included) \$ 98 _____
Dental Assistant (See note below)* \$ Nil _____

☐ **Office Personnel, Office Manager, Receptionist** (7% GST included) \$ 98 _____
Office Personnel, Office Manager, Receptionist (See note below)* \$ Nil _____

☐ **Dental Technician** (7% GST included) \$ 98 _____

☐ **Children (6-12 years)** Child's Age: _____
Monday program (7% GST included) \$ 48 _____
Tuesday program (7% GST included) \$ 48 _____

☐ **Student Dentist** \$ Nil _____
☐ **Student Hygienist** \$ Nil _____
☐ **Student Dental Assistant** \$ Nil _____

* Students must provide proof of full-time attendance.

***NOTE:** Every dentist enrolled for the Convention can register two (2) non-dentist staff members for the convention proper **FREE OF CHARGE**. The first or second non-dentist staff member to register **with** a dentist, choose "Registration Fees" Nil. Send Registration Form with that of the dentist.

SOCIAL EVENTS

- ☐ **Opening Ceremony** — Sunday, August 27th
(Subject to space availability — One ticket per Registration Form)
Will attend ☐ Yes ☐ No \$ Nil
- ☐ **Meet & Greet** — Sunday, August 27th
..... (7% GST included) \$ 50
- ☐ **President's Gala** — 50's Dance — Monday, August 28th
..... (7% GST included) \$ 75
- ☐ **Wine Tasting Reception** — Tuesday, August 29th
..... (7% GST included) \$ 25
- ☐ **Golf Day** — Sunday, August 27th
..... (7% GST included) \$ 98
- ☐ **Fun Run** — Tuesday, August 29th a.m.
..... (7% GST included) \$ 20
- ☐ **Visits and Tours**
Monday tour and luncheon (7% GST included) \$ 50
Tuesday tour and luncheon (7% GST included) \$ 50

TOTAL \$

Person/company
responsible for payment: _____

- ☐ I wish to pay the above total by credit card: ☐ MasterCard ☐ VISA

Card # _____ Expiry date _____

Name of Cardholder _____

SIGNATURE _____

- ☐ I enclose a cheque payable to the Canadian Dental Association.
Post-dated cheques will not be accepted.

CANCELLATION POLICY:

- Cancellation received, in writing, on or before July 21, 1995 — full refund
- Cancellation received, in writing, after July 21, 1995 — subject to a 25% administrative charge

NO REFUND AFTER AUGUST 18, 1995

INFORMATION ON REGISTRATION:

All participants registered for the Convention:

1. have access to all general lectures of the Convention proper
2. have access to the exhibit hall
3. have access to the opening ceremony
4. are entitled to register for the appropriate limited attendance and hands-on courses
5. are entitled to register for social programs, visits and tours

Spouses and children have access to the Opening Ceremony only if they register for one or more of the Convention's day programs. Spouses not registered for the Convention do not have access to the general lectures or to the exhibit hall.

MAKING YOUR AIRLINE RESERVATIONS

Special arrangements have been made with Air Canada to offer participants discounts on airfares.

To take advantage of this service, you must call Air Canada Convention Central at 1-800-361-7585 and quote event CV950931.

HOTEL RESERVATION

Type of Room:

- ☐ Single ☐ Double ☐ Twin ☐ Other (please specify) _____

Special Requests: _____

Indicate your choice of hotel* (by numbering the boxes):

- ☐ Westin Hotel (CDA Headquarters) \$128.00 single/double
☐ Château Laurier \$127.00 single/double
☐ Sheraton \$110.00 single/double
☐ Novotel \$99.00 single/double

* Prices do not include taxes.

Arrival Date: _____

Arrival Time: _____

Departure Date: _____

All changes and/or cancellations must be made **IN WRITING** through CDA Conventions. Fax to (613) 523-3062.

In order to reserve a room, a guarantee for the first night is essential. The guarantee will apply to the first night **ONLY**. To cancel your reservation advise CDA Conventions at least three (3) days prior to your projected arrival date.

CHEQUES WILL NOT BE ACCEPTED.

- ☐ MasterCard ☐ American Express ☐ VISA

Card # _____ Expiry date _____

Name of Cardholder _____

SIGNATURE _____

DEADLINE for Reservations: July 21, 1995

ACCOMMODATION

- ☐ I do not require accommodation
☐ Other arrangements have been made.

MAIL Pre-registration and Hotel Reservation Form with payment to:

1995 CDA Convention
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

OR FAX

(if paid by credit card): (613) 523-3062

Dentists, Hygienists, Assistants, Office Personnel
& Technicians registering by July 21, 1995
will be eligible to win two tickets **anywhere**
Air Canada flies in Europe and North America!
(Some restrictions apply.)



OTTAWA 1995

August 26 - 29

VISITS & ONE-DAY TOURS

SIGHTS, TASTES AND CULTURE • Monday, August 28th

Enjoy a fully commentated tour of the city in a "Piccadilly" double-decker bus and relish the sights of the Nation's Capital. Our excursion starts with a ride around the Byward Market, through the heart of the city. Then it's a loop along Sussex Drive to Rockcliffe Park, one of the most scenic drives in the area. We then proceed on Queen Elizabeth Drive as it follows the historic Rideau Canal. You will see the waters of Dows Lake, you'll ride past national embassies and heritage homes before we reach our final destination, the National Art Gallery of Canada.

Here, you will enjoy a fabulous luncheon before embarking on a voyage of discovery through a museum strictly dedicated to preserving Canada's cultural heritage. This guided tour of the National Art Gallery will let you admire the finest European and American masterpieces of painting and sculpture from the Middle Ages to the present, Asian sculpture dating to the 3rd century A.D., prints, drawings and photographs displayed in spacious galleries and quiet courtyards. A fitting ending to your day is the opportunity to browse at your leisure through the Gallery's Bookstore or perhaps go back and admire once more a work of art that you particularly enjoyed.

The tour will end at the National Art Gallery; participants will have to return to their hotel on their own (the National Art Gallery is only a short cab ride to any downtown hotel).

A DAY OF DISCOVERY IN MERRICKVILLE • Tuesday, August 29th

Board one of our comfortable motorcoaches for a one hour ride though Ottawa's delightful countryside en route to the charming little village of Merrickville. Nestled on the shores of the Rideau River and the Rideau Canal, Merrickville is a village imbued with history dating back to the 1790's.

Your visit will start with an informative walking tour which includes a visit to the Blockhouse Museum and an impressive old stone house full of artifacts from the time of the building of the Rideau Canal and locks. Then it's an outdoor lunch (if weather permits) at one of the quaint old inns offering typical Eastern Ontario cuisine. The afternoon will be full of surprises as you stroll through the village's many craft and antique shops. Even if you don't like shopping, you will enjoy this opportunity of browsing through artists' studios and admiring the craftsmanship displayed in the many charming little boutiques. Or, you can visit the village bakery and return with homebaked goodies.



SPOUSES' PROGRAM

The CDA Convention is for every member of the dental team as well as for accompanying spouses. Visit our exhibits and attend our scientific program which is designed to be of interest to you also. As well you will have the opportunity to register for social events and organized visits and one-day tours that are sure to please even the most discriminating of tastes.

Plus, if you are registered for the Convention, you are entitled to attend the Opening Ceremony. There are plenty of events for you to enjoy during the convention. Reserve now so you're not disappointed!



OTTAWA 1995
August 26 - 29

ANNUAL FUN RUN & WALK TUESDAY, AUGUST 29TH RUN STARTS AT 7:00 a.m.



Come and have fun... on the run!

Are you an avid runner, a fitness enthusiast or do you simply enjoy taking the dog for a walk on a nice sunny day? In either case, you will enjoy the course that we have designed for you. Run 5 or 10 kilometers or walk 5 kilometers at your own speed. Yes, we will record your time, but most of all we want you to have fun!

All participants will receive a T-shirt and will qualify for prizes that will be drawn at the completion of the race. Snacks and beverages will be available.

\$1 Million Hole-in-One!

Every golfer is automatically eligible to qualify for the \$1,000,000 challenge!
Read on to find out more ...

The golf tournament at the CDA 1995 Convention is being hosted by the **Dentistry Canada Fund** and **Aurum Ceramic/Classic**. This tournament will be the grand finale of 18 tournaments to be held from coast to coast this year.

During regular play, participants who are "closest-to-the-hole" at a designated hole will be entitled to compete for the \$1 million hole-in-one. In total there will be 20 contenders for the \$1 million prize. The final competition will take place after regular play.

Have fun and contribute to a good cause. Twenty dollars of each entry fee will be donated to the Dentistry Canada Fund — Canada's only non-profit, charitable organization dedicated to encouraging optimal oral health for all Canadians through education, research and awareness program. A tax-deductible receipt in the amount of twenty dollars will be issued to every golfer.

The tournament will take place on Sunday, August 27 beginning at 9:30 a.m. at the Chaudière Golf Club. To register, simply check the golf section on your enrolment form and send in the necessary fees.

Space is limited. Enrolment is on a first-come, first-served basis.

CHILDREN'S PROGRAM

MONDAY, AUGUST 28th

Museum of Science & Technology / McDonald's / Wave Pool

We'll begin the day at the **MUSEUM OF SCIENCE & TECHNOLOGY** — a place that is irresistible to all ages! Exhibits and displays encourage a hands-on approach to science with everything from trains to space and from printing presses to agriculture. Watch baby chicks being hatched and participate in EUREKA! the interactive science hall.

Next we'll stop in at **McDonald's** for lunch before we go to the **WAVE POOL** for the afternoon. This supervised indoor pool is great enjoyment with timed intermittent waves created throughout the pool. Great for those who love the water. The pool also has calm periods for those who just like to swim. There's not much summer fun without being in the water!



TUESDAY, AUGUST 29

Museum of Civilization / Picnic Lunch / Log Farm

Today, we'll start by visiting the **MUSEUM OF CIVILIZATION**. This museum features a lively Children's Museum where a guided tour takes the children to various civilizations around the world. Dressing up in period clothing and tasting ethnic foods from different cultures are part of this wonderful experience.

After the museum, we'll be transported to the **LOG FARM** where we'll enjoy a **picnic lunch**. Then we'll hop on the hay wagon and take a hayride throughout the farm! Crops are at their peak and there are lots of farm animals to visit such as pigs, goats, sheep, horses, ducks, geese and chickens! Our hosts will be dressed in late 19th century costume and will spend the rest of the afternoon with us making ice cream and homemade butter! Other activities will also be available.



OTTAWA 1995

August 26 - 29



SOCIAL PROGRAM

Sunday, August 27 • 5:00 p.m. - 7:00 p.m.

ASH TEMPLE and THE CDA CONVENTION invite you to the 1995 OPENING CEREMONY

**An evening
of fun and
entertainment.**

- Comedians
- Circus Acts
- Entertainers
- ... and more!

***Come with your family and enjoy
two hours of fun and laughter.***

All Convention delegates are invited to attend the Opening Ceremony. Be sure to request your ticket on your enrolment form. **REGISTER NOW**, just over 2,000 seats are available. First-come, first-served!

The Opening Ceremony will be followed by a ... MEET & GREET EVENING

Bring your family and friends to a light evening meal in a carnival atmosphere. Renew old acquaintances and make new friends.

There will be circus acts, games and entertainment for all.

You may purchase your tickets by checking the appropriate box on your enrolment form.

Monday, August 28 • 7:00 p.m. - 1:00 a.m.

***Get ready to put
on your blue suede
shoes for the
PRESIDENT'S
GALA!***



7:00 p.m. - 8:00 p.m. — Cocktails
8:00 p.m. onward — Dinner & dance

Men, grease your hair, don your white T-shirts, white socks and tight black pants. Women, tease your hair, take out that poodle skirt and college sweater or chiffon evening dress and pull up your bobby socks. The 50's and early 60's are here again!

You will enjoy great food and dynamic music in a decor reminiscent of the era. Reserve your tickets now for this evening of shared memories (see registration form).

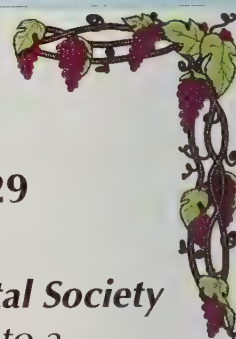
WINE TASTING RECEPTION

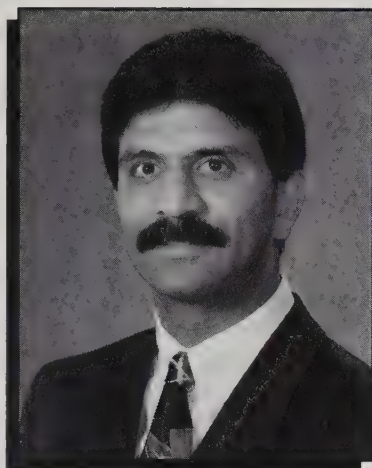
Tuesday, August 29

***The Ottawa Dental Society
invites you to a
WINE TASTING
RECEPTION.***

Whether you are one of the finest connoisseurs or simply a amateur, you are sure to discover wines that will delight your palate.

To register, see your enrolment form.





Financially Free and Fifty Something: Pipe Dream or Possibility?

(Part 2 of 2)

Imtiaz Manji, B.Sc.

Principal of ExperDent

In last month's column, we discussed how the goal of financial freedom often eludes dentists and explained why this is particularly worrisome for those nearing retirement. But we also noted that there are solutions to this problem, which have the potential to help practitioners at all stages of their career, be they new grads, established practitioners or on the verge of retirement.

This month, we will detail (based on our experience) how dentists can come together to their mutual benefit, thereby creating win-win situations for all involved. It's important to remember that our discussion is just an overview of *some* of the operational configurations available. Each practice situation is unique, and important business decisions require the involvement of your professional advisors, particularly your lawyer and accountant.

Option 1

A fifty something dentist maintains his or her practice, but also associates with another practice outside of his or her primary drawing area. In this case, the fifty something dentist has tried to increase production levels in his or her own location, but to no avail. If his or her present production can be achieved in less days, however, the practitioner is free to associate elsewhere, thereby supplementing his or her primary income.

In this option, the senior dentist seeks to associate in a busy practice that would benefit from having another practitioner around for a couple of days each week. By condensing the length of the work week in his or her own practice to three days from, say, four days (while maintaining the same production), the senior dentist is able to associate at the second location. There are two important points to remember here: first, the second location must be out of the primary drawing area of the first location; second, the senior dentist must be sure that production levels in his or her own practice are the best they're going to get. There is no substitute for growth in your own location.

Dentists who identify with this option can begin to explore it by sending out letters of enquiry to classmates and colleagues. Emphasize in your letter that your colleagues should not be concerned about protecting the long-term goodwill of their practices, as you are only looking for an associate position — and not a future buy-in. (However, because of your experience, it is certainly appropriate to negotiate a compensation package that's higher than the average offered to a younger associate.)

Ideally, you should take your assistant with you and have the host dentist pay her salary, as would be the case in a standard associate

arrangement. Your receptionist, however, should remain in your primary practice to answer calls. Above all else, she should not mention to patients that you have a reduced presence in the practice.

This option allows the senior dentist to supplement his or her primary income and reduce overheads (as the host dentist pays for the assistant), while the host dentist gains an experienced associate to manage his or her excess patient flow.

Option 2

In this option, two fifty something dentists who work in the same general area (and have reduced patient bases) come together under a single roof. The idea is to reduce the cost of delivering dentistry by reducing overheads. (For instance, working out of the same facility — perhaps operating "swing" hours or working three days each per week — they could share a receptionist, an assistant, and the cost of facility improvements.)

When two senior dentists come together, the motivation for doing so must be clear: the driving force is ongoing cash flow (rather than long-term practice value). These practitioners rely on their practice incomes for day-to-day living, and cannot afford to sell their individual practices.



Not only can they not afford to sell their practices, they cannot afford to deal with a buy-out in the event of the death or disability of the other dentist. So arrangements must be made at the outset to ensure that, in the event of death or disability, the remaining dentist can acquire the practice at an insignificant cost. The two dentists must agree on this point (otherwise, there is no point in pursuing this type of arrangement).

To determine whether you should join forces with a like practitioner, you need to detail the projected overheads, including staffing, at the new practice environment. Both dentists should have their advisors review their recent financial statements, and then superimpose these figures over the projected figures for the combined facility. Assuming a potential 10 per cent loss in the patient base (just to be cautious), you'll be able to determine whether your financial situation meshes with the new overheads. (The last thing you both need is to have a reduced combined net.)

The calendar and staffing requirements of the joint facility need to be planned in advance. Perhaps you'll have one receptionist working 40 hours per week, with each dentist working 25 hours per week. Hiring one assistant and one additional person with the dual job role of assisting and reception, could be the ideal complement to your team.

The incremental costs of two practitioners coming together includes: announcements and any other marketing for the combined practice; professional support to facilitate the transaction; minor facility enhancements, if necessary, to accommodate both producers; staff arrangements (as there may not be a position for everyone in the combined practice); insurance to fund disability and death; and the practice valuation fee (necessary for insurance funding and potential buy-sell arrangements).

After your advisors have "plugged" the above data into your practice budget, you should get a clear sense of whether this option is an attractive one.

Checklist For Success

If you think you're a candidate for changing your present practice situation, then you should consider these action plans:

Action 1: Identify your concerns and clearly understand your situation. Thinking of slowing down? Perhaps it makes sense to sell your practice while it has good value and become an associate for the new owner. The goal here is to maximize on the goodwill of your practice. Or perhaps the present income you're receiving from the practice (along with the protection of insurance coverage in the event of death or disability) are more important than protecting practice goodwill for the final sale. If so, your main concern is continued income stream, which you may risk (or reduce) by becoming an associate.

Action 2: Whether you're considering moving into a facility or bringing someone into yours, ensure that the space, calendar, practice budget and staff are in place to support such a transition. Keep in mind that staff can make or break the coupling of practices, particularly when the calendar is reconfigured to add early morning and evening appointments.

Action 3: Have a practice valuation done, prior to the transition, whenever the arrangement involves the potential for a buy-out (or when practice goodwill/chart ownership can become blurred).

Action 4: Identify the appropriate party to join forces with. Both parties must have a high sense of integrity to handle such delicate transactions. They must also consider the impact that their new decisions will have on staff and patients. If the deal proves to be outside of their comfort zone, you could open up a Pandora's Box.

Action 5: Ensure that there is appropriate insurance in place, covering disaster planning, death, disability, overhead protection and buy-sell insurance.

Action 6: Have the appropriate contracts drawn up to document the transaction. Make sure you have considered all the logistics and details for making this a successful arrangement. You may even want to "live" through the new situation by test-driving the relationship for a day or two each week for a month to ensure that both parties are still in agreement. (This will also help you to understand all the implications of the arrangement.)

A Final Word Of Caution: None of the above actions are total solutions, nor will they save two failing practices. In other words, simply by coming together, the two "wrongs" will not make a "right." In fact, you could end up becoming even more "wrong." Therefore, careful planning is vital.

Option 3

A fifty something dentist takes his or her reduced patient base and moves into a new dentist's facility that has excess capacity. Shared overheads reduce operational stress for both parties. The fifty something dentist may sell his or her practice to the new dentist on retirement.

In this option, there is a possibility that the move could actually devalue the senior dentist's practice. As such, it is imperative that a valuation of the senior dentist's practice is done (and the sale price

agreed to by both parties) prior to moving into the host dentist's facility.

The senior dentist would work out of this facility either under an expense sharing arrangement or by agreeing to contribute a percentage of collections to overhead. The only logical basis for making such a move is that the fifty something dentist reduces overhead and enhances his or her ability to generate long-term cash flow. For the host dentist (who incidentally doesn't necessarily have to be a "new" dentist), the benefits are reduced

overheads and the ability to purchase the practice of the senior dentist on his or her retirement.

Option 4

A fifty something dentist with many patients wants to slow down, but needs the practice for continuing supplemental income. The senior dentist brings in a new dentist (or one with a small patient base), and then redistributes his or her patient base by giving some patients to the new dentist. This allows the fifty something dentist to protect practice goodwill while sharing overheads. Eventually, the younger dentist may buy the practice and the owner dentist could work as an associate.

Although a senior dentist may want to slow down, he or she must pay careful attention to whether there are enough patients to support the new dentist. For example, if a practitioner wants to reduce the number of days he or she works each year from 200 to 140, that doesn't necessarily mean that there will be enough work to keep the new dentist busy. As such, bringing in an individual who has some sort of patient base already makes the most sense. These patients, com-

bined with the excess patients the senior dentist will be transferring over, make it an attractive situation for the new dentist.

Here again, it's critical that a practice valuation is done and that the arrangements and timing for the final sale are agreed on in advance. (The entire transaction will likely need to be supported by associate, facility-sharing and buy-out agreements.)

Option 5

A fifty something dentist (or any established dentist for that matter) can't serve the needs of all his or her patients. An associate (new dentist or one without patients) is brought in to manage the excess.

In this option, it is absolutely critical that the senior dentist has a surplus patient base that will support the integration of a long-term partner. Initially, the candidate will come aboard as an associate, but with a view to soon becoming an equity associate and ultimately, a partner. (Please see the following articles in past issues of the *Journal* for more information: Economics of the Associate, 59(3):239-241, 247, 1993; Compensating the As-

sociate, 59(4):344-346, 1993; and Fear Not: Practice Buy Ins, 59(5):441-442, 1993.)

Financial Freedom: It Is Possible

As you've read in this two-part series, there are a number of creative solutions that allow dentists to come together to achieve financial freedom. Clearly, the confines of this column do not allow a comprehensive discussion of all the available options, and each practice situation has its unique features that must be factored into the equation.

Making a decision to change your practice's status quo is never easy. It requires meticulous planning and appropriate advice from professionals to assist you in assessing the risks and opportunities. No situation is risk free, but by involving your advisors, you can ensure that the risks, namely negative impact on your primary income and/or practice goodwill, are reduced. And with minimal risks, win-win arrangements — be it with a new, established, or soon-to-be retiring dentist — are not only possible, they're probable. ■



Do You Think You Have Arthritis?

If you think you do, you're in good company. More than three million other Canadians have it too. For the facts about arthritis, arthritis research and treatment programs, contact the office of The Arthritis Society nearest you. It's listed in your phone book.



THE ARTHRITIS SOCIETY

There Is An Alternative To High Priced Computer Systems!

Canadian dentists coast-to-coast have used MaxiDENT dental management software for twelve years with immense satisfaction. Canada's Easiest-To-Use dental system handles billings, receivables, claims, CDAnet EDI, statements, recalls, practice marketing, and much more, and gets better with every update!

MaxiDENT includes an electronic appointment scheduler, two word-processors, a step-by-step illustration-packed User's Guide, AccPac Payables, Payroll, and General Ledger plus a free upgrade to our new Windows version.

Reliable, proven, DOS-based, multi-user, multi-tasking MaxiDENT runs on IBM compatibles and outperforms systems costing many times more. It can be used with Microsoft Windows, and never needs costly Unix or Xenix.

MaxiDENT is so easy to learn and use, just follow our instructions and run it in your office within days. Or choose low-cost professional on-site training. Either way, you have a full year's support which includes unlimited toll-free hotline help and free updates. No wonder Oral Health called MaxiDENT Canada's best kept secret!

When you order MaxiDENT software, we help you get your best price on computer equipment from your local vendor, or us. Save thousands of dollars and join a growing list of satisfied users.

Don't be fooled by its low price of only \$4995. Learn why patients, staff and dentists love powerful MaxiDENT, how it saves time, eliminates bottlenecks, relieves stress, makes you money, and has important tax advantages. Phone toll free now without obligation for an information package, user list and demo disk.

Call Arthur Arkin, President, Maxim Computer Systems, developers of

MAXIDENT Dental Management Software



1-800-663-7199

JOURNAL

March/
Mars
1995
Vol. 61
No. 3

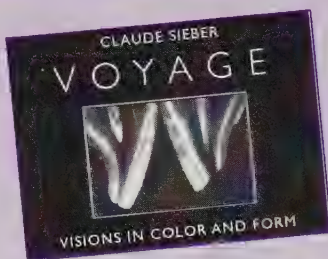
NEW BOOKS from Quintessence

Voyage: Visions in Color and Form

Claude Sieber

This beautifully produced, over-sized book, brimming with exquisite photographs, is an exploration of the visual properties of teeth, both natural and restored. Using cross sections and other unusual perspectives, photographs reveal each tooth's unique structure and form, with a focus on light transmission, reflection, and absorption through enamel and dentin. Special attention is given to translucence, opalescence, and luminosity.

143 pp; 256 color illus; US \$148 (2966)



3-D Modeling Technology in Oral and Maxillofacial Surgery

J. Thomas Lambrecht

This book addresses the opportunities offered by 3-D modeling in oral and maxillofacial surgery. Solid models of skeletal structures offer diagnostic and therapeutic advantages for patients in need of orthognathic surgery, pre-prosthetic surgery, implants, and TMJ therapy. Such models decrease intraoperative time and have educational applications. Lavishly illustrated.

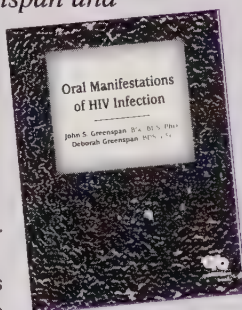
160 pp; 288 illus (228 color); US \$148 (2877)

Oral Manifestations of HIV Infection Proceedings of the Second International Workshop on the Oral Manifestations of HIV Infection, January 31-February 3, 1993, San Francisco, California

Edited by John S. Greenspan and Deborah Greenspan

This comprehensive volume, edited by leaders in research on HIV and AIDS, brings together the papers presented at this important 1993 workshop. Addressed is a wide array of issues from oral lesions to periodontal concerns to provision of care and infection control practices.

374 pp; 100 illus (41 color); US \$64 (2869)



Aesthetic Design for Ceramic Restorations

David Korson

Those seeking the most natural, esthetic results in dental ceramics will learn what can be achieved with contemporary techniques. This book describes how to heighten communication between dentist, technician, and patient. Also investigated are tissue management, impressions, occlusal records, waxing techniques that aid technical construction, color, and laboratory techniques. Includes case studies.

159 pp; 292 color illus; US \$78 (8812)

Lasers in Dentistry

Edited by Leo J. Miserendino and Robert M. Pick

Approaching lasers from both clinical and scientific standpoints, this book provides an overview of the use of lasers in dentistry today. Learn about: how lasers interact with soft and hard oral tissues; safety standards and regulations; surgical technique; and clinical applications of various dental materials. Use this book to evaluate the potential lasers have for strengthening your practice.

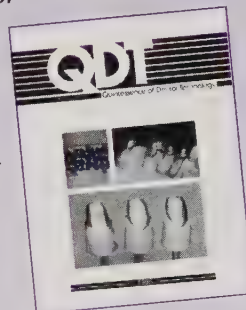
344 pp; 349 illus (160 color); US \$98 (2826)

QDT 1995

John Sorensen, Editor

QDT gathers international articles on new techniques in dental technology into one source; it's a time-saving way to follow the year's advances. QDT 1995 features "CAPTEK: A new capillary casting technology for ceramometal restorations," "Electroforming," "High-strength alumina crowns and fixed partial dentures generated by copy-milling technology," and more.

213 pp; 494 illus (347 color); US \$56 (0606)



Implant-Supported Prostheses Occlusion, Clinical Cases, and Laboratory Procedures

Vicente Jiménez-López

This generously illustrated book offers solutions for clinical and laboratory challenges in osseointegrated oral reconstruction. The subject is approached from a context of function, hygiene, and esthetics. Occlusion is explored in terms of what is required for implant success and patient health. Clinical cases are presented, and a chapter is devoted to the Brånemark System.

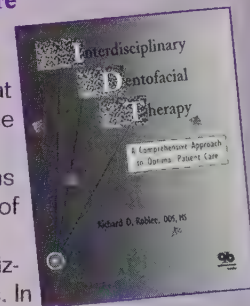
256 pp; 680 illus (most in color); US \$140 (2575)

Interdisciplinary Dentofacial Therapy A Comprehensive Approach to Optimal Patient Care

Richard Roblee

Discover a paradigm that integrates the knowledge and skills of the dental disciplines. Create teams that make the best use of new and existing treatment modalities, maximizing treatment outcomes. In addition to concepts and methods, this book offers a detailed model and practical, concrete suggestions. Lavishly illustrated, this is the most complete text available on IDT.

236 pp; 473 illus (442 color); US \$128 (1889)



Fundamentals of Pediatric Dentistry, 3rd ed.

Richard J. Mathewson and Robert E. Primosch

This revision of a well-known textbook covers all aspects of pediatric dentistry and is updated to include new developments. Topics include diagnosis, prophylaxis, patient management, restorative procedures, endodontic treatment, prosthodontics, and treatment planning. The book is copiously illustrated, with step-by-step explanations of common procedures. Comprehensive, yet detailed, it is ideal for the dental student.

400 pp; 661 illus (28 color); US \$58 (2621)

Failure in the Restored Dentition Management and Treatment

Michael D. Wise

This colossal text explores the causes of failure in restored dentition and approaches to treatment. Contents include patient and practice management; techniques, materials, and instrumentation; TMJ disorders and dental problems of psychogenic origin; and a detailed technical appendix. Treatment planning and dentist-technician collaboration are emphasized.

768 pp; 1,553 illus (most in color); US \$240 (8811)

Order Form For fast service CALL TOLL FREE 800-621-0387 (within USA & Canada)

Please send the book(s) listed below:

CODE	AUTHOR/TITLE	PRICE

NAME _____ (Please print)

ADDRESS _____

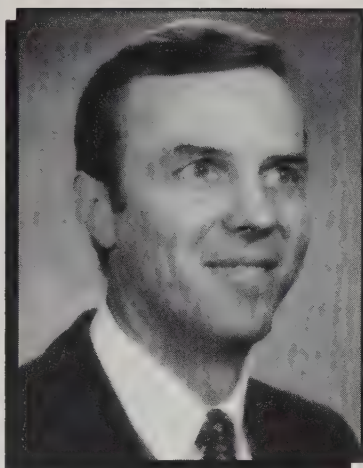
CITY _____ STATE _____ ZIP _____ TELEPHONE _____

☐ Bill me, including shipping & handling ☐ Charge to my credit card plus shipping & handling
☐ VISA ☐ MasterCard ☐ American Express ☐ Discover

Card no. _____ Expires _____ Signature _____

Prices subject to change without notice. All sales are final. Shipping and handling charges will be added to all orders. For Illinois and Canadian residents, sales tax will be added if applicable. Payment must be made in US funds.

Mail or fax order form to: Quintessence Publishing Co, Inc, 551 North Kimberly Drive, Carol Stream, IL 60188-1881
 TEL: 800-621-0387 OR 708-682-3223; FAX: 708-682-3288.



How Successful Is Your Dental Practice? — 10 Performance Criteria

H. Jack Stockton, DMD, CFP, MBA

Introduction

As a consultant to the dental profession, one of the most common questions I am asked is: "How successful is my dental practice?"

It is not an easy question to answer, in large part because success is a very ambiguous word. An individual dentist's practice should be considered successful only if it has achieved the objectives set for it by that particular dentist. In other words, the measurement criteria for a successful dental practice are set by the individual dentist, and successful practices come in all sizes and forms.

When most dentists ask: "How successful is my dental practice?," what they really mean is: "How does my practice compare to other dental practices?" In reality, they want to know if their practices are doing better than the typical dental practice. The problem is that many dentists do not know what performance criteria they should be looking at to make this comparison, nor what performance level would be considered above average.

In this article, I will discuss some of the more important performance criteria for general dental practices, as well as the performance levels that would meet the generally-accepted definition of a successful North American general dental practice. Most of what I have to say is based on

nearly 15 years of consulting one-on-one with wet-fingered dentists. However, some of the numbers quoted below are based on my ongoing study of the dental practice management literature.

It's important to remember that this article relates mainly to general dental practices. Specialty practices have significantly higher average incomes, and different performance criteria often apply.

The important performance criteria for general dental practices include: gross practice billings, hourly productivity, practice profitability, new patient flow, patient retention, recall system effectiveness, practice growth, accounts receivable control, overhead expense ratio and staff turnover. In this article, I'll attempt to present these performance criteria in a way that should allow you to determine how well your practice stacks up against all the others.

1. Gross Practice Billings

Gross practice billings is the performance criterion that most dentists seem to focus on, although other criteria are often more important in determining the relative "success" of a dental practice.

The median gross billings for general dental practices in the United States for 1993 was reported as \$300,002 U.S. (*Dental Economics*, October 1994). Given an exchange rate of about 1.35 in

1993, this amounts to about \$405,000 in Canadian dollars. It should be noted that this survey of dental incomes excludes the five per cent of dentists in the employee/contractor-associate category.

My experience indicates that median gross billings for general dental practices in Canada are now slightly less than they are in the United States (after converting to Canadian dollars for comparison). Furthermore, in Canada, as in the United States, there are very significant regional variations. It appears that Alberta and British Columbia, followed by Ontario, have the highest gross billings by practice in Canada (they also have the highest per capita consumption of dentistry).

When attempting to determine the relative "success" of your dental practice, you should be aware that there is significant variation in billings depending on the number of years since graduation from dental school. Dentists with the highest average billings are those who have been in practice for between 10 and 25 years. Average gross billings for general dentists steadily rise until about the 10th year of practice. At this point they plateau, and then start to decline steadily after about the 25th year. This typical income pattern has been reported in a number of articles in both the United States and Canada.

JOURNAL

March/
Mars
1995
Vol. 61
No. 3



2. Hourly Production

As with annual gross billings, there are significant variations in average hourly production depending on the number of years in practice and the region of the country. The number of practice staff is another important variable, in particular, the number of "auxiliary direct producers" (i.e., auxiliaries such as dental hygienists and certified dental assistants (CDAs) who perform dental procedures independent of the dentist). The typical general dental practice has a revenue mix whereby 65 to 70 per cent of income is produced by the dentist (exclusive of laboratory and auxiliary billings), seven to 10 per cent by laboratory billings, and 20 to 25 per cent by dental auxiliaries. However, in some practices the auxiliaries are responsible for over 50 per cent of production, and in other practices there are no direct auxiliary billings.

The average dentist works about 1,600 hours per year, producing revenue of about \$150 to \$175 per hour (exclusive of laboratory and auxiliary billings). A dentist who is personally producing over \$200 per hour would generally be considered "successful," regardless of age or practice location.

In my opinion, the best way to assess the hourly productivity of the auxiliary direct producers in a dental practice is to relate their hourly production to their hourly wages. I have found that the average dental hygienist's wages are just under 40 per cent of his or her direct billings, while the average CDA's wages are closer to 30 per cent of his or her direct billings. Therefore, in "successful" practices, hourly auxiliary direct production should be more than two and one-half times the auxiliary producers' hourly wages.

3. Practice Profitability

I believe that one of the best practice performance criteria is profitability. Likely the best measure of profitability for any type of business is return on invested capital. In fact, the average pre-tax return on invested capital for a general dental practice, after deducting fair compensation for the dentist-owner, is about 20 per

cent. This figure is lower in very competitive cities such as Vancouver and Toronto, and higher in less competitive towns and rural areas.

Since one can easily earn a pre-tax return of five to 10 per cent from investments, which are much less risky than a dental practice, a return of less than 10 per cent on the capital invested in a dental practice would have to be considered unsuccessful (except for start-up practices).

(For a detailed discussion on how to calculate return on invested capital for a dental practice, please see my previous article: Is your practice a profitable business? *J Can Dent Assoc* 56(12):1,093-1,095, 1990.)

4. New Patient Flow

New patient flow is a very important performance criterion, but it is very difficult to know what the required performance level should be. Required new patient flow depends on many factors, such as the type of practice (e.g., pedodontic practices need more patients) and the mobility of the population (e.g., Calgary practices need more new patients than Winnipeg practices). However, to maintain an average dental practice over the long-term, most practices — regardless of their type or location — need a minimum of 10 new patients per month. Most "successful" growing practices need to see at least 20 new patients per month, and practices seeing over 40 new patients per month should grow quite rapidly.

"Successful" dental practices constantly monitor new patient flow. Not only is the absolute number of new patients important, but the trend in new patient flow is equally important. A steady decline in new patients per month is a leading indicator of problems for the practice in the future. Action should be taken immediately to correct a downward trend in new patient flow . . . before a busyness problem surfaces.

5. Recall System Effectiveness

The average general dental practice does not have a highly effective recall system. In fact, only about 50 per cent of the active pa-

tient base is on regular recall in the typical practice, and very few general practices have over 75 per cent of the patients on regular recall. Therefore, although it sounds poor, a practice's recall system could be considered "successful" if over 50 per cent of its patients are on regular recall.

A simple way to determine the effectiveness of the recall system for your practice is as follows: first, count the number of active patient charts (patients you feel would still consider you their dentist); next, determine the average number of recall patient visits per month and multiply that number by the average recall interval for your patients (recalls per month X recall interval = number of patients on active recall); and, finally, divide the number of patients on active recall by the total number of active patients to determine the effectiveness ratio for your recall system.

For example, if you have 2,000 active patients, are seeing 160 patients per month on recall, and your average recall interval is seven months, then the effectiveness of your recall system is 56 per cent (i.e., $[160 \times 7] / 2,000 = 0.56$).

6. Patient Retention

A practice could be seeing a large number of new patients per month, but if more are leaving through the back-door (slippage) than are coming through the front, the number of active patients in the practice is really declining. A "successful" dental practice has good patient retention, i.e., low slippage. Again, as with new patient flow, an acceptable level of slippage is difficult to state because of the wide variation in the types and locations of practices. Zero slippage is unrealistic to expect, since a few patients will die each year and some will move to another city. My experience has been that the average practice likely experiences slippage of about 10 to 12 per cent of the active patient base per year, i.e., patient retention is about 88 to 90 per cent.

The simplest way to determine patient retention is probably to count the number of new patients attracted to the practice each

month and compare this number to the growth in the practice recall system. For example, if you are attracting 20 new patients per month and the effectiveness of your recall system is 50 per cent (i.e., 50 per cent of your patients are on regular recall), then patient retention would be 100 per cent if the number of patients on regular recall increased by 10 per month (one for every two new patients seen). However, if your number of recall patients per month is not growing at all, then you are likely losing 20 patients per month (the same number of patients are lost as the number of new patients coming in). This method of determining patient retention assumes a constant recall system effectiveness ratio.

Another, more time-consuming method of determining patient retention involves constantly monitoring the number of active patients in the practice, and comparing changes in total number of active patients to new patient flow.

7. Practice Growth

One saying that rings true for dental practices is "you cannot stand still for long — if you are not going forward, you are going to fall back." To be "successful," a dental practice must continue to grow. The two best measures of practice growth are real growth in practice billings (after adjusting for inflation) and growth in the numbers of patients on regular recall (discussed in number 5, above).

8. Accounts Receivable Control

The average general dental practice carries about five weeks of billings as accounts receivable (about 10 per cent of annual billings). Accounts receivable of less than four weeks billings would be considered good, whereas accounts receivable of more than eight weeks billings usually indicates poor accounts receivable control in the practice.

Even more important than the total amount of accounts receivable is the average "age" of the accounts receivable. The longer an account has been outstanding, the less likely it is to be collected. If the proportion of accounts re-

Are you current on all the latest developments in dentistry?



If not, the CRA Newsletter can help.

The CRA Newsletter is often referred to as the "CONSUMER REPORT" of dentistry. It gives you the latest comparative clinical information on dental materials, techniques, and equipment. Advanced data come from clinicians who identify the most effective products and procedures through comparative studies. **If you find it difficult to decide which dental products to purchase and the best way to use them — the CRA Newsletter can help you.**

Cut and return completed information to receive
your free three month trial subscription.

Name _____

Address/Telephone _____

City/Province/Zip Code/Country _____

CAN3



Clinical Research Associates

3707 North Canyon Road, No. 6
Provo, Utah 84604 USA
801/226.2121 • FAX 801/226.4726



March/
Mars
1995
Vol. 61
No. 3



ceivable that have been outstanding for more than 90 days exceeds 15 per cent of the total, then there should be some concern. If this proportion exceeds 25 per cent, there should be great concern and the accounts receivable control procedures should be completely reassessed.

The level of bad debts (uncollectible accounts) is another indicator that you can use to assess the effectiveness of your accounts receivable control methods. Practices with bad debts of less than one per cent of billings, which is about average for Canadian dental practices, should be considered "successful" in this performance category. Surveys conducted in the United States indicate that bad debts south of the border are higher, at over two per cent of total billings.

9. Overhead Expense Ratio

The average overhead expense ratio (practice expenses as a per cent of total billings) for North American general dental practices is 60-65 per cent, and varies slightly from area to area. Certain specialty practices generally have lower overhead expense ratios, e.g., endodontic and oral surgery specialty practices have the lowest average overhead ratios.

An overhead expense ratio of 50 per cent or less for any general dental practice would usually be considered "successful" performance. However, one should look beyond the basic overhead expense ratio when considering practice efficiency. For example, some practices with relatively high overhead expense ratios may be operating efficiently, but could simply have much higher financ-

ing costs than similar practices owned by dentists who were able, fortunately, to self-finance the purchase and operation of their practices. Financing costs can be over 10 per cent of billings for some practices, and zero for others.

Another factor that can cause overhead ratios to be high, but does not necessarily indicate a poorly-managed practice, is a high proportion of hygienist billings in a practice. Generally, practices with an emphasis on prevention (e.g., a high proportion of periodontic and/or pedodontic procedures performed by auxiliaries) will have a higher staff payroll, often resulting in a higher overhead expense ratio. These practices can be very profitable and efficient, even though the overhead expense ratio is above average. For more details concerning what is a reasonable payroll expense for different types of practices, please refer to another one of my previous articles (How much is too much? *Ontario Dentist* 68(8):20-22, 1991).

10. Staff Turnover

Staff turnover is an often overlooked performance criterion, but I have found that most "successful" practices have low staff turnover. High staff turnover causes many problems. Dentists operating offices with high staff turnover are often frustrated, stressed-out and relatively unproductive.

Various practice management articles have quantified the total cost of having to replace a dental staff member at anywhere from \$5,000 to \$50,000, or more. What's more, studies indicate that the average term of employment for staff in dental offices is only about two and one-half years. Staff

turnover is indeed a major problem for many dental practices.

"Successful" practices should certainly have an average staff turnover period that is longer than the typical two and one-half years — an average staff turnover period of more than five years would be considered very good.

Final Note

In this article, I have listed 10 yardsticks you can use to compare the performance of your general dental practice with others. There are certainly other measures of practice performance that can be used, but these 10 should allow you to quickly assess how "successful" your practice is. Sadly, I have found that many dental practices do not have the data available to really assess how they are doing. For example, I have found that more than half of the dental practices I visit for the first time do not monitor new patient flow (one of the most important measures of practice health). If you fall into the category of not having sufficient useful data to assess the performance of your practice, I urge you to start immediately collecting this information on a timely basis. ■

Dr. H. Jack Stockton is an associate professor with the department of dentistry, faculty of dentistry, at the University of Manitoba. He is also the faculty's course coordinator for practice management and dental jurisprudence, and does part-time consulting with private practice dentists.

Reprint requests to: Dr. H. Jack Stockton, Faculty of Dentistry, University of Manitoba, 780 Bannatyne Ave., Winnipeg, Manitoba R3E 0W3.

DID YOU KNOW?

What's in a name?

Walker Smith was one of the most famous fighters of all time. Believe it or not, Walker Smith is the real name of Sugar Ray Robinson.

When Smith was 15 years old he tried to enter an amateur boxing tournament but was told he needed an AAU membership card. He couldn't get the card until he was 16, so he borrowed one from a friend. The name on the card he borrowed was Ray Robinson, so he used the name to fight under.

Later, George Gainford, while watching Walker beat a Canadian amateur champion, quipped that Robinson "was a sweet fighter. Sweet as sugar." The name stuck, and that's how Walker Smith became known as Sugar Ray Robinson.

(Source, *Perks*, Vol. 5, No. 5, Regina, Sask.)

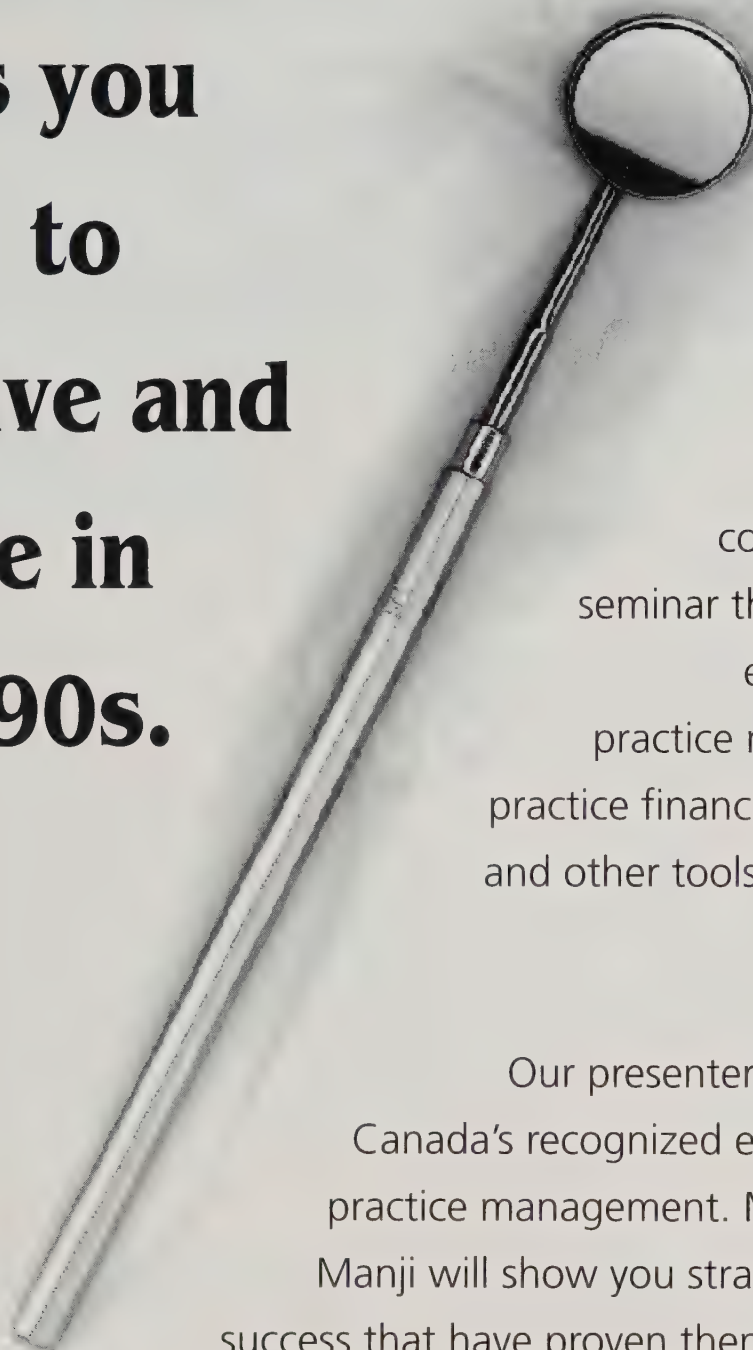


JOURNAL

March/
Mars
1995
Vol. 61
No. 3

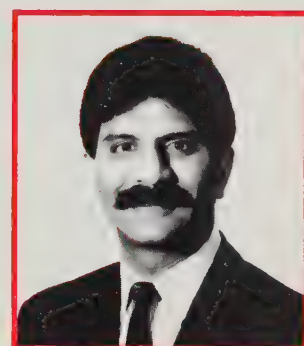
One of the tools you need to survive and thrive in the '90s.

CANADIAN
DENTAL
ASSOCIATION



But there are others and we'd like to tell you about them. You are cordially invited to a one day seminar that's packed with practical, effective tips and advice on practice management, patient care, practice financial planning, team building and other tools you need to survive – and thrive – in the '90s.

Our presenter is one of Canada's recognized experts on practice management. Mr. Imtiaz Manji will show you strategies for success that have proven themselves in hundreds of practices from coast to coast.



Windsor
January 13, 1995

Winnipeg
May 5, 1995

Halifax
February 10, 1995

Hamilton
March 3, 1995

London
June 23, 1995

Saskatoon
May 12, 1995

See next page for more details...



The Canadian Dental Association

One Day Seminar • Limited Enrolment • CE Credits Pending*

Surviving and Thriving in the '90s

Re-engineering your practice and life plan for success!

Strategies for Patient Care

- ✓ Discover how successful practices achieve 90% retention in hygiene.
- ✓ Determine how many hygiene days your practice really needs to meet patient care needs.
- ✓ Turn your patients into in-house marketers. Learn 9 times you can ask for a referral comfortably.
- ✓ Learn how to identify your patients' motivations and sidestep reasons to avoid treatment.
- ✓ Find out what patients want to know to accept ideal treatment & maintain optimum oral health.
- Minimize Downtime

Strategies for Transition Management

- ✓ Discover when and how to integrate an associate into your growing practice.
- ✓ Find out why "equity" associateships are so successful.
- ✓ Untangle practice stagnation and overcome saturation through transition options.
- ✓ Learn how to plan your calendar for the re-engineered practice.
- Maximize Practice Value

Strategies for Practice Financial Planning

- ✓ Learn to control practice expenses.
- ✓ Discover how to anticipate your cashflow and eliminate shortfalls.
- ✓ Find out the vital signs of financially healthy practices.
- ✓ Learn to play "what if's" before making important decisions.
- Eliminate Financial Stress

Strategies for Team Leadership

- ✓ Learn the 6 key factors in practice management that your team must understand.
- ✓ Adjust your team's job roles to increase productivity and maximize patient care.
- ✓ Discover how to set precise and realistic goals for team performance, accountability and incentives.
- ✓ Find out how team meetings and communication are essential in the successful practice.
- ✓ Learn 20 common mistakes dentists make which decrease team performance & increase overhead.
- Build a Highly-Motivated Team

Agenda 8:30: Sign-in • 9:00: Begin • 12:15: Break (lunch included) • 1:15: Resume • 4:00: Close

Pre-registration is required. There will be no on-site registrations. Register early since enrolment is limited.

OFFICE MANAGER/SPOUSE attending with dentist \$80

DENTIST \$160

SUBTOTAL

GST 7% of subtotal (#R106845209)

TOTAL

Number Total

	\$
	\$
	\$
	\$
	\$

Name: _____ CDA Membership #: _____

Street: _____ City/Province: _____

Postal Code: _____ Telephone (Office): _____ Seminar Location: _____

A receipt for the above registration fees will be issued to: _____

☐ Cheque made payable to the Canadian Dental Association enclosed. (No post-dated cheques)

☐ Visa

☐ MasterCard

Signature: _____ Credit Card #: _____

Expiry Date: _____

Mail or fax registration form and payment to:

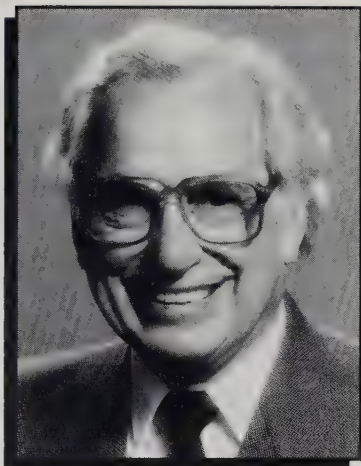
Canadian Dental Association, Member Services, 1815 Alta Vista Drive, Ottawa, ON, K1G 3Y6

Register today! Call CDA toll-free 1-800-267-6354 or fax 1-613-523-7736.

Confirmation of your enrolment will be received by mail. Cancellation policy: Full refund 21 days prior to seminar.

*CE Credits will apply subject to Provincial approvals pending.

CDA member dentists
receive a \$75 credit towards
the purchase of
Taking Care of Business
Volumes 1, 2 & 3



Consent — Is It Informed and Valid?

Wesley J. Dunn, DDS

Introduction

Nowhere in the English or French speaking world has the subject of "informed consent" been more clearly or unequivocally enunciated by the courts than it has in Canada.

In 1980, two Supreme Court of Canada judgments — *Hopp v. Lepp*¹ and *Reibl v. Hughes*² — laid down the foundation on which the many further decisions of Canada's provincial high courts built. These cases have been rejected the then existing standard of what a "reasonable physician" (or dentist) would choose to disclose in the circumstances, and adopted the standard of what a "reasonable patient" would want to know.

The two judgments of Canada's Supreme Court did not come quickly. By 1980, some 66 years had elapsed since the principle of consent to health care treatment was first enunciated by Mr. Justice Cardoso in the United States: "Every human being of adult years and sound mind has the right to determine what should be done with his or her own body."³ Clearly, it would be difficult to interpret the Cardoso espousal based on such standard as the health care practitioner chooses to establish.

The subject of consent to treatment has been comprehensively addressed in Chapter 3 of an excellent book by Lorne E. Rozovsky, Q.C.⁴ Much of what follows is based on

this thoroughly researched and clearly-written text.

Basic Requirements Of Informed Consent

There is, in law, the concept of *consensus ad idem*. This is the notion that the minds of the parties to a contract — and there is a contract when a dentist undertakes to render treatment to a patient — must meet in agreement and understanding of the terms of the contract for that contract to be valid.

In effect, for consent to be valid, dentists have a duty to deal honestly with the patient as to the necessity, character, and importance of the operation or service being recommended, its possible consequences, and whether success might reasonably be expected to ameliorate or remove the patient's trouble. Where treatment is elective or merely for experimental purposes, a higher degree of disclosure is required.

A dentist cannot legally begin to treat a patient without first obtaining the patient's consent to the planned treatment. Such a rule protects the patient's right to choose what should or should not be done with her or his body.

To insure the inviolability of a person's body, treatment without consent is characterized as a harmful touching and, therefore, a battery or trespass. The fact that the treatment provided may have been beneficial to the patient does not protect the practitioner from an action for trespass, because trespass

does not depend on there being an injury to the patient. It hinges on the dentist's touching of the patient without having first obtained consent.

Logically, a patient cannot give a valid consent to treatment about which she or he knows nothing. The right of patients to decide what to do with their bodies necessarily implies the right to receive and comprehend the information required to make an intelligent choice. As such, the knowledge that a patient needs to make a decision cannot be withheld or limited merely because the patient might, on learning the risks, decline treatment. Indeed, the right to decline treatment is the very right being protected.

The general rule concerning the information that dentists must impart to their patients to obtain consent that is both informed and meets the test of self-determination is that the patient must be given sufficient information about the procedure and its benefits and risks to make an intelligent decision. Court judgements have clearly set out the following requirements:

- the benefits must be presented,
- the reasonable risks must be explained,
- the alternatives, if any, must be described,
- the prognosis if the patient refuses treatment must be communicated, and

JOURNAL

March/
Mars
1995
Vol. 61
No. 3



- the information must be presented in a manner and language that the patient can understand.

Legal Criteria For a Valid Consent

The legal criteria for a valid consent embrace the mental and legal capability of the person giving that consent. There must be an ability to understand what it means to give consent and to comprehend the information on which the consent is based. And although almost every dental patient has the legal capacity to consent to treatment, there may be exceptions. These situations typically involve the removal of the individual's capacity for consent by legislation or by the courts.

Consent must be given freely and voluntarily. If it is acquired through misrepresentation or fraud, a patient's consent is not valid. Similarly, if consent is obtained by offering false promises or guarantees, there will, almost assuredly, be an invalidity. The treatment to which the patient or parent/legal guardian consents must be the treatment performed. A parent having given consent only to the restoration of a seriously carious primary molar is unlikely to be euphoric if he or she is subsequently informed that the tooth in question was not saveable, and then observes the child biting on a pad of gauze while awaiting the cessation of bleeding from the now empty socket — if no previous consent was obtained for the extraction procedure.

What Need Not Be Told

The courts have said that "remote risks" need not be enunciated. It is always a question, however, as to whether a particular risk may be classified as remote. If the literature reveals that a particularly unfortunate sequela occurred once in a million times, possibly the risk of it happening again would be considered remote. But if this sequela presented itself once in 40,000 times, the risk may be juridically too significant for the dentist not to advise the patient of its existence.

Not surprisingly, the more serious the risk involved, the narrower the courts' definition of remoteness. There is no ready answer as

to what constitutes remoteness, however. If in doubt, it is always better to disclose.

Generally, it isn't necessary to impart information that should be common knowledge. For instance, it is widely known that local anesthetic acts to numb the area being anesthetized. Although there may be other valid risks associated with using a local anesthetic, which should be explained to the patient, it is common knowledge that the area in question will be "frozen."

The same general rules apply to informing the patient about specific scientific details. If the patient seeks information concerning the specific content of the silver alloy indicated by the restorative procedures being recommended, the dentist must correctly respond. But, in the absence of the patient's direct request for such information, the dentist need not provide such — for the patient at least — nonessential information.

Should the patient absolutely refuse to be informed of such things as reasonable risks, then this refusal should clearly be entered on his or her chart and the patient should be asked to sign the entry.

Gaps in Consent

Rozovsky has suggested that there are at least five possible gaps in the consent process, any of which could subject the dentist to litigation:

- the lack of a good history,
- the failure to use the history to advise the patient,
- ineffective communications,
- an incomplete consent process, and
- a failure to update or document the patient's dental history record.

It is not an overstatement to contend that, apart from practising a high standard of dentistry, there is nothing that protects dentists more from successful, patient-initiated litigation than the maintenance of complete and accurate records. These records must be produced contemporaneously with the circumstances to which they apply. And the practice must be habitual. If they're ever required to defend the entries in patients' records, dentists must be able to demonstrate that the records are current and accurate. In addition, they must demonstrate that

the carefulness and conscientiousness observable in the patient records before the court constitutes a practice that applies equally to the dental records of all other patients.

Minors

In Ontario, the province in which this article was written, a nonmarried person reaches the age of majority and ceases to be a minor on his or her 18th birthday. (*Age of Majority and Accountability Act*, R.S.O., 1980, Chap. 7). Here, the words "minor" and "infant" are legally interchangeable. Minors can give a valid consent to treatment if they are capable of appreciating fully the nature and consequences of a particular operation or treatment. It is not beyond the realm of possibility that a 14-year-old child could possess the necessary competence to provide a valid, informed consent. Having said that, however, except in an emergency where it is impossible to make contact with a parent within the time frame necessary for something to be done (e.g. a child receives injuries to oral structures arising from a playground accident at school and the parent cannot be located), it is injudicious and unwise to treat a minor in the absence of informed consent by the parent or guardian.

Conclusion

The consent process is initiated when patients are mentally and legally capable of giving consent in non-emergency cases. It begins with an illness, injury or condition requiring treatment. A patient history is taken, which includes both disclosures and questions. Treatment decisions are then made jointly by the patient and the dentist, after which there is timely, complete, and accurate documentation. ■

Dr. Wesley J. Dunn is founding dean and professor emeritus, faculty of dentistry, University of Western Ontario.

References

1. *Hopp v. Lepp* [1980] 2 S.C.R. 192
2. *Reibl v. Hughes* [1980] 2 S.C.R. 880
3. *Schloendorff v. Society of New York Hospital* (1914), 211 N.Y. 125 at 129-130
4. Rozovsky, L.E. *Canadian Dental Law*. Toronto and Vancouver: Butterworth and Co. (Canada) Ltd., 1987.

Membership is your Voice

**CDA is the national voice of dentistry.
Take advantage of the many professional and
personal benefits of membership and help shape
the future of Canadian dentistry.**



**CANADIAN
DENTAL
ASSOCIATION**

S Y S T E M S F O R S U C C E S S

PROOF POSITIVE

HELIOMOLAR RANKS #1*

A recent independent research institute study confirms what thousands of clinicians have experienced in more than ten years of clinical use: Heliomolar outperforms. It ranked #1 over 21 different restorative materials, including direct and indirect resin, amalgam and porcelain. Not only does Heliomolar offer superior wear resistance, it also provides outstanding color stability and color match. Its beauty and high enamel-like polish make it ideal for anterior use. Plus Heliomolar is the only microfil that provides fluoride release and is ADA Accepted.

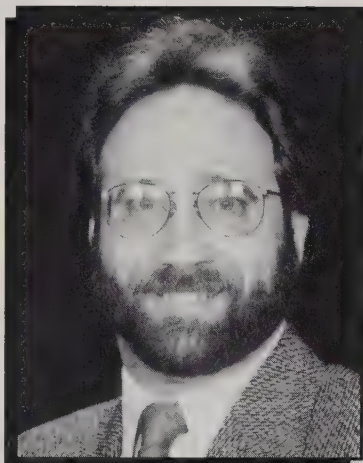
*CRA Newsletter, Vol. 18, Issue 5, May 1994.

HELIOMOLAR®

UNIVERSAL MICROFIL

IVOCLAR VIVADENT
IVOCLAR NORTH AMERICA, INC.

For information on Heliomolar or any other products in our system, call us toll free at 1-800-5-DENTAL in the U.S., 1-800-263-8182 in Canada.



Suicide — No Margin For Error

Canada suffered the loss, through suicide, of at least three dentists in a two-month period last summer

Robert S. Unger, PhD, C.Psych.

Suicide. It has been associated with Homo Sapiens almost since the beginning of time, and was first reported as early as 2000 B.C. But the word itself wasn't seen in written form until 1651, when it first appeared in the *Oxford English Dictionary*.

The first recorded instance of suicide prevention apparently occurred in 100 A.D., when Plutarch was given the mandate to end the suicide hysteria among young women in the Greek city of Miletus. Unfortunately, society's suicide investigation, research and prevention efforts did not make good use of the head start offered by Plutarch. Serious activity in these areas has only been maintained since the 1950s.

Today, the most common definition of suicide — "... death caused by an action initiated by a person with the intention of causing his or her own death. . ." — is the same one that was first developed by Durkheim in 1897. However, several studies have incorporated strategic attempts to define, investigate, research and predict the occurrence of this pervasive malady of the human race.

Durkheim's research suggested three basic types of suicide:

- *Altruistic suicide* is considered by some societies (e.g. Japan) as a reasonable escape from an unfortunate and otherwise inescapable situation;

- *Egoistic suicide* is usually performed by lonely, rootless, socially- and physically-isolated individuals who have minimal or non-existent contact with their social surroundings;

- *Anomic suicide* is usually performed by an individual whose typical, familiar, comfortable, long-standing relationship with his or her social environment has abruptly ended or dramatically changed. This is most often the result of the death of a loved one, losing a job, or having an irreversible health problem.

Recent research has also suggested an inverse relationship between suicide and homicide — as one action increases within a population group, the other action decreases. The factors most common to suicide and homicide include three basic components: aggression, often resulting from delayed frustration; a circular business cycle, often resulting in a reorganization of wealth, power and status; and frustration, often resulting in an unstable maintenance of political power, status, wealth and health. Particularly in our North American civilization, suicide appears to be more common among high-status achievers, while homicide appears to be more prevalent among lower socio-economic groups.

Are You Or Someone You Know At Risk Of Becoming Suicidal?

In evaluating suicidal risk, a clinical understanding of the events that have occurred in the victim's life for the past two or three weeks, and especially during the past 24 to 36 hours, is critical. Many studies have examined gender, race, socio-economic status, climate, age, physical disabilities and profession as potential risk factors. As well, the individual's coping strategies, significant relationships, strength of familial relationships, physical, emotional, financial and moral burdens, social and personal resources, past attempts at self-harm, history of physical and/or emotional trauma, current lifestyle and current medical and emotional status are all pertinent factors leading to increased risk of self-harm.

An individual should be considered to be at significant risk for self-harm if he or she has a history of multiple high-lethality (high probability of certain death without unexpected interruption) suicide attempts, previous suicide attempts, and alcohol/substance abuse. In addition, isolation/withdrawal from friends, society and familiar activities, disorientation or disorganization, or frequent eruptions of unexplained hostility, are strong indicators of heightened suicidal-risk.



Some of the more common emotional states experienced by suicidal persons include, but are not limited to: depression, hopelessness, helplessness, isolation, withdrawal, hostility, ambivalence, tunnel-vision, alcoholism/substance abuse and an increasing desire to manipulate or obfuscate others.

Research studies have investigated the recently exposed phenomenon of adult children who identify, years later, with some aspects of their suicidal parent. The results of this situation-specific critical-incident trauma appear to be of four major types:

- *Direct Identification With The Parent In The Suicidal Act.* This type appears to be manifested most often by an adult child of a parent who committed suicide. The adult child's own suicidal act closely mimics, in extreme detail, many specifics of the parent's suicidal act. This type can also be manifested by the adult child displaying the exact behavioral displays that the suicidal parent exhibited while in the act of suicide (screaming, gasping for breath, writhing in pain) — even though the adult child may not be engaged in actual suicidal behavior.
- *Resignation Of the Adult-Child To the Fate Of Death By Suicide.* This type is most often manifested by a sincere, rigid and irrational belief that it is inevitable that he or she, the adult child, will die in the same manner as the parent.
- *Continuing Fears of Suicidal Impulse Eruptions.* This type describes situations in which the adult child has continuous fears that it is only a matter of time before his or her impulse control mechanisms are no longer successful at preventing suicidal thoughts from progressing from suicidal ideation to suicidal acts.
- *Masked Manifestations Of Identification With The Suicided Parent.* This type describes the adult child's irrational identification with perceived high-fear situations (such as driving, heights, flying, etc.). When this individual enters psychotherapy, an

uncovering and examination of the latent manifestations of the symbolic meanings and relationship to the suicided parent usually becomes readily apparent. Ironically, this process can actually increase the suicide risk in the adult child, once these manifestations come into his or her conscious awareness.

Unfortunately, no one has developed a completely successful, short-duration treatment program capable of significantly modifying the deep-seated psychological disturbance that exists within individuals engaged in most suicidal acts. A growing body of literature suggests that suicidal acts that are used as a means to escape an irreversible, completely debilitating physical dysfunction are considered acts of altruistic suicide. For the most part, however, the suicidal acts we read about today can be classified as Durkheim's anomic suicide.

As you may know, Canada suffered the loss, through suicide, of at least three dentists within a two-month period last summer. Across the border in the United States, the New York City Police Department recently added a 12th name to the list of its officers who committed suicide in 1994.

One of the New York police officers who committed suicide in 1994 had proven himself to be a hero only a few days earlier. He'd actually pulled some people from a burning building at great risk to himself. Whether his heroic act was one of bravery or unsuccessful suicide will never be known.

What To Do If You Consider Yourself To Be Actively Suicidal

Remain calm. Remember that your concern and recognition that you are considering lethal behavior is a strong indication that your judgement, although slightly and temporarily unstable, is still intact enough to recognize the danger of the action that you are considering. Try not to remain alone. Call a friend, a colleague, a relative, a neighbor, 911, the police, a distress centre, etc. Try to disengage the

thought process that got you to the point where you are seriously considering self-harm. Think about something that has brought you happiness in the past. If a recent situation has appeared to make a shambles out of your world, consider that there may be other options or solutions of which you may not be aware, no matter how hard you have thought about it.

What To Do In A Suicidal Emergency

If you happen to interrupt a suicide attempt, try to remain calm. Attempt to assess the individual's demeanor, mental status, mental alertness and physical condition. These will dictate your next few actions. If the person is stable, you must try to contact emergency personnel (911, distress centre, police, fire, hospital) as soon as possible, and provide basic information such as location, situation, method attempted, time of attempt and condition of the victim. If you suspect that the person has tried to overdose, salvage whatever remains of pills, vials, etc. that you can.

If you are required to administer first aid at the scene, here are some basic tips:

1. If you suspect the victim has ingested a lethal dose of pills, attempt to induce vomiting, **but only if the victim is conscious and you have no reason to suspect that caustic agents are involved.**
2. If you observe that the victim has slash wounds (wrists, legs, etc.), and is bleeding profusely, apply direct pressure with a clean cloth and maintain pressure until assistance arrives.
3. If you suspect inhalation poisoning, attempt to provide an immediate clean, fresh-air source to the victim — through mouth-to-mouth resuscitation, if necessary.
4. If the victim is already unconscious on your arrival, attempt to keep the victim warm, turn him or her onto his or her side to prevent choking, loosen clothing near the neck and throat, clear any debris from the

mouth, ensure that the tongue is not closing the airway, check breathing and heart activity continuously, and provide CPR as required. Maintain this status until assistance arrives.

5. Do not provide any type of liquid to the victim.

There are many agencies available to assist you either on a personal matter or regarding someone with whom you work, live, love or

play. In addition to local police, fire and health agencies, your provincial dental association is often able to help. Remember, an individual in the midst of emotional turmoil spends great amounts of energy in masking or denying the existence or extent of their emotional chaos. If you are able to detect such distress, there is a very good chance that the true extent of the problem is 10 times worse than you think. At the very least, ap-

proach your friend or colleague and offer a listening ear.

It may be the most rewarding experience of your life. ■

Dr. Unger is a clinical psychologist who consults with many organizations in high-risk, high-security professions. He has spoken widely to dental and other health-provider audiences and publishes regularly in business and health profession journals. He maintains private practices in Toronto and London, Ont., and can be reached at (416) 230-8255.



ABSTRACT (Pharmacology)

Drug Interactions: Potential Interactions In Dentistry

The great increase in the use of pharmacologic agents to treat a variety of medical conditions on an outpatient basis has created a situation where there is a significant chance of drug interaction in the clinical dental setting. The concurrent administration of two or more drugs is common and dentists must be aware of the potential for drug interactions in patients they are treating. Some drug interactions are used to benefit patients where one drug modifies the effects of another or decreases the side effects of a drug. Beneficial drug interactions can be used to reduce overall drug dosage through the synergistic action of two different medications. This is often used in the treatment of pain, cardiovascular disease, infection and also in the administration of anaesthesia. Other drug interactions can produce harmful effects or nullify the therapeutic effects of medications.

Drug interactions fall into two general classifications:

1. Pharmacodynamic: where the pharmacologic activity of one drug is modified by another.

2. Pharmacokinetic: where one drug's absorption, distribution, metabolism or excretion is altered by another drug.

The information on drug interactions is obtained from clinical reports of interactions, through theoretical analysis and through animal research. Serious drug interactions are most commonly seen when one drug has a very low margin for error in dose range (low therapeutic index), a small volume of distribution in the body or a high degree of binding to serum plasma protein.

Pharmacodynamic Drug Interactions:

This type of drug interaction is less common than pharmacokinetic drug interactions and usually these interactions are synergistic or antagonistic in nature. Synergism results in a drug effect equal to or greater than the sum of each drug and antagonism is a drug effect that is lesser than the sum of each drug by itself.

The most common synergistic pharmacodynamic drug interaction is that between central nervous system depressant drugs such as ethanol and opioids or minor tranquilizers. There are also synergistic reactions between dissimilar drugs such as the interaction between antidepressants and phenothiazines yielding an anticholinergic reaction.

Antagonism is seen when a patient receives a bacteriostatic antibiotic such as erythromycin concurrently with a bacteriocidal drug such as penicillin.

Pharmacokinetic Drug Interactions:

Most drug interactions are a result of altered pharmacokinetics. This type of interaction occurs as a result of altered absorption, distribution, metabolism or excretion. Drug interactions of a pharmacokinetic nature are described by primary mechanism below.

Absorption:

The absorption of a drug can be altered by chemical combination with another drug or food in the gastrointestinal system. This chemical combination can then be poorly absorbed thus reducing the amount of drug available for therapeutic effect. The tetracycline drugs are particularly prone to chelation by metals forming an insoluble complex and reducing the effectiveness of the antibiotic. A change in gastric pH such as that induced by antacids or drugs like cimetidine can also alter the absorption of drugs.

Distribution:

The displacement of drugs from plasma protein binding sites through the competition for these binding sites can significantly change the distribution and effectiveness of a drug. This type of interaction is of particular concern with drugs that are highly bound to proteins with a low volume of distribution and a low therapeutic index such as the digitalis glycosides. The blood level of a displaced drug will rise and can result in drug toxicity. The displaced drug is often metabolized rapidly by the liver and drug levels return to normal.

Metabolism:

The alteration of the metabolism of a drug can occur through the inhibition or stimulation of hepatic enzymes. Some drugs such as cimetidine are potent inhibitors of the hepatic metabolic enzyme pathway and this can result in greatly increased plasma concentrations.

Excretion:

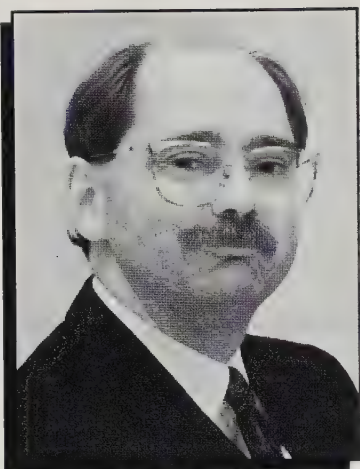
One drug can alter the excretion of another resulting in either an increase or decrease in serum drug concentration and hence effect.

The concurrent administration of salicylates with antacids can result in a decreased effect because of the increased excretion of salicylates due to an increase in urinary pH. The use of probenecid to block the urinary excretion of penicillin is a well known method of increasing the serum concentration of penicillin.

... Continued on page 250

JOURNAL

March/
Mars
1995
Vol. 61
No. 3



Designers and Office Design

Harold Crittenden, LID, IDA, IDC

If you're like many dentists, you've made considerable financial and emotional commitments to your office design. And you know that it can be expensive and exasperating to design and build surroundings that capture and reflect the philosophy and personality of your practice.

Similarly, it can be a frustrating exercise to create an atmosphere of comfort and warmth for your patients, and an environment of efficiency and ease for you and your staff. But it doesn't have to be.

When you retain an independent designer, you can ease or even eliminate expenses, exasperation and frustration. In fact, the service and value offered by independent designers can be a pleasant surprise.

Consider the cost of your entire project. An independent designer can often save you money because he or she isn't selling or representing a single line of equipment or furniture. This isn't true of all designers, however. Some dental supply houses employ staff designers, and bill the services of these designers at bargain rates, knowing that they will ultimately make their profits by selling you higher priced products. But an independent designer will carefully search several sources for your purchases, and find the products that are best for your office.

Some people argue that the costs balance out, regardless of which approach is used, in that the fees paid to an independent designer offset the savings they generate by searching the marketplace on your behalf. So if costs are similar, why bother?

We believe that a designer's work speaks for itself. It also speaks to patients. One of the examples we often cite is Dr. Tom Evans' office in northwest Calgary. As soon as you step through his door, you are wrapped in an aura of calm and order. In the reception area, operations are streamlined: patients are greeted on one side of the granite topped desk and can attend to bookings and payments on the other. The warmly-lit seating area is lined with wood paneling and furnished with black leather chairs, and a built-in aquarium in the reception area is at once soothing and interesting. Wood is used effectively throughout Dr. Evans' office, and takes the clinical feel out of the hygiene and operator suites. The typical visual clutter of patient records is removed from the main reception area as well, further promoting the aura of calm and order.

"The warmth of the office contributes to how people feel. It calms them. We have fewer behavior problems. That was an interesting byproduct I hadn't expected," says Dr. Evans.

Patients who have a relaxed, pleasant experience because of their surroundings are more apt to have a better experience overall at your office. They're also more likely to return and to keep their appointments.

When Dr. Evans retained our firm six years ago, one of his primary goals was to create an office that instantly related one impression to his clients — quality. He wanted to create an environment that let people see exactly what kind of service they could expect. Why? After operating out of an office he felt was outdated, he wanted to reposition his practice to provide high-ticket, high-quality dental services. All his research told him that his office had to radiate high quality.

Still, Dr. Evans didn't want quality at any price. He demanded lasting value. "The original goal was to have something classic, in a design that needed a minimum of maintenance . . . and that's been very successful in attracting patients."

After six years in his new office, Dr. Evans still appreciates his workplace. "I like it here. It's comfortable to me. I like the work. The kinesthetic part of the practice has been very successful."

In fact, the added value that designers bring to their projects comes in many forms. For instance, experienced independent



Fig. 1: Reception desk and accounting office.



Fig. 2: Reception area waiting room.

designers are usually familiar with lease rates, common rental practices, and exactly how much landlords are willing to contribute to leasehold improvements. Costs can vary greatly from building to building and from location to location, but a designer will present you with a variety of options. As well, most designers use a tendering process that ensures the best possible prices on goods and services. This process is crucial in establishing the availability and cost of products, tradespeople and suppliers.

Documentation is another reason to use a designer. Our standard procedure is to carefully document everything before and during the renovation stages. There should be no surprises or unexpected costs once the construction or procurement process begins.

Over the years — and after many dental and medical projects — we've gathered some valuable advice on how to refurbish and/or renovate your office. We believe that using this advice, or at least considering it, could save you money and reduce stress.

Know What You Want and Need

It's usually easy enough to know what you need, especially when it comes to equipment. Without fail, dentists want an environment of quality, productivity, efficiency and cleanliness — the very things that we, as skilled designers, incorporate into every project.

But it can be difficult to decide what you want. A designer is more effective when you can clearly define your preferences for furnishings, colors, styles, effects and materials (such as wood or lino floors; track or recessed lighting; and pastel or earth-toned color palette). Don't forget to consider the tastes and demands of staff and patients — many people appreciate having a dedicated phone to use while they're waiting for their appointment, for example, and parents like a play area for children. These features may be an integral part of your reception area.

If you're thinking about renovating, it could be beneficial to keep a file of notes and ideas. Toss in pictures of what you like, or samples of finishes, fabrics and paint.

Selecting a Designer

Experience varies widely among designers, so I'd recommend choosing one that has professional training, belongs to a professional association, and can offer referrals. Before you make your final selection, you should:

- Follow up on referrals: what do other practitioners or clients like and dislike about a designer's work? What do you like and dislike about it?
- Know the range of services the designer can offer and make sure he or she is capable of doing the work you want. For example, does the designer you're considering have experience in millwork and lighting design, partition layout and finish selection? Can he or she competently coordinate acoustical, mechanical, electrical and dental suppliers and tradespeople?
- Interview a number of designers. Don't be afraid to shop around. You wouldn't necessarily buy the first car you test drive, so why retain the first designer you meet?



Fig. 3: Entrance to operatories, treatment rooms.



Fig. 4: X-ray room.

- Feel open and confident with the designers you talk to. Frank and honest communication is crucial in relating your wants and needs, particularly during the planning stages.
- Ask for quotes and compare prices. Always discuss fees fully and openly. Neither party should have a hidden agenda.

Life-Cycle planning

Design planning is every bit as important as financial and managerial planning. It should be approached with the same amount of acumen, intuition and shrewdness that goes into any business decision.

Ideally, you should try to plan for the effects of technology, fluctuating economic conditions, a changing labor force, stiffer competition and government policies on your practice. It's important for your office design to be flexible. It should:

- Allow room for growth, new partners, new services, new techniques and new technology;
- Explore the potential for shared equipment and personnel;

- Be built to last. Your choice of materials and equipment could be influenced by their life cycle.

Insist On Programming

Programming is the methodical investigation and analysis of the operational procedures and equipment in your office. You, your designer and your staff must work honestly and cooperatively to comfortably accommodate every aspect of the practice. Given the right information, the designer can assist in creating an office that operates smoothly and comfortably. This involves a detailed examination of:

- The movement and patterns of patients and staff;
- The various elements of the office (such as the reception area, consulting room, staff room, lab, X-ray, washrooms, business office, storage and filing);
- A typical patient visit or experience, from how the patient is greeted, seated, treated and advised, to where he or she receives consultation or pays the bill;
- The future of your practice;

- The relationships between all of the above factors.

We often conduct programming, and the next step, the design process, during a series of week-end or after-hours workshops. These sessions often reveal inadequacies or inefficiencies, and can help you to refine your procedures. They also give your staff an opportunity to become fully acquainted with all aspects of your practice.

The Design Process

After programming comes the design process. This is when things really start to fall into place and take shape, and the first renderings, or drawings, begin to emerge. It's a process of imagination and exploration, where all possibilities are considered and evaluated. Before any decisions are made, options are presented both to you and your staff. Pros and cons will be discussed, and refinements made. Then the entire process is repeated until you have a design you're satisfied with.

It is imperative for you to be fully satisfied with the designer's plans. You have to work within



One of those rare moments when the left side of your brain actually agrees with the right.

It's a feeling that doesn't come around often. That euphoria when your emotional side and your rational side are both saying the same thing.

It's the Saab 9000 5-door sport sedan or 4-door classic sedan.

When it speaks to your emotions, the 9000 uses eccentric, alluring lines, superb roadholding and the instant gratification of a 3.0L V6 or 2.3L turbo engine. Once inside, sumptuous leather seating for five, astounding acoustics and a cockpit clearly inspired by our aircraft design heritage take over.

Then Saab begins to speak to your rational side. With its crumple zones, steel safety cage, side impact beams, dual front airbags and ABS brakes, the 9000 was named the safest car in Sweden.

Not just once but three times running.

And what could be more rational than comfortable seating for five, an enormous cargo capacity, and countless thoughtful details like a pollen filter, heated seats and an anti-theft system with remote.

Of course, Saab not only appeals to all your senses, it also appeals to your pocketbook. Starting at just \$36,740*, the 9000 gives you refinements and features not found on some cars twice the price.

The Saab 9000 cordially invites both your left side and your right side to take part in a very stimulating, very satisfying exercise. Simply call 1-800-263-1999 to arrange a test drive.



SAAB
9000

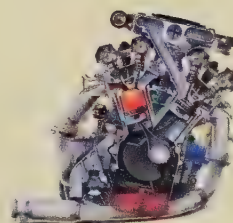


Safety in the Saab 9000 is second to none.

To prove it, we have three awards from Folksam, Sweden's largest insurance company.



The Aero gives you inviting heated leather seats up front, with three memory settings for the most important seat of all. The driver's seat.



While being propelled by our extremely compact 3.0L V6 or 2.3L turbo, you'll find most of our competitors in the rear view mirror.

*MSRP of Saab 9000 CS 1SA package including freight (\$745). License, insurance and taxes not included. Retailer may sell for less. Leather optional on this package.



April

Dental Health Month

April Dental Health Month									
				1					
2	3	4	5	6	7	8			
9	10	11	12	13	14	15			
16	17	18	19	20	21	22			
23	24	25	26	27	28	29			
30									

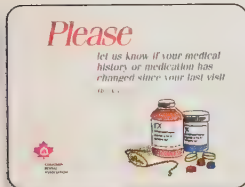


April is Dental Health Month — a month-long celebration of the importance of good dental care. And

for some timely awareness tools your patients can really sink their teeth into, take a look at these tooth-toned treasures from CDA!

Talk about dressed for success — comfortable and easy care "Keep Smiling" golf shirts fit the occasion to a tee.

Here's a gift your patients will really get stuck on... "Keep Smiling" stickers, featuring Bob's beautiful smile, are an economical way to help patients remember to stick with the habit of good dental care.



If only the walls could talk! Now they can speak volumes with gentle reminder plaques, featuring important dental health

messages. It's wall-to-wall wisdom your patients can use!



CANADIAN DENTAL ASSOCIATION

Read all about it!

For patients who want to get a bite on all the facts, spread the word with CDA's brochure and pamphlet series featuring information and advice on a variety of dental concerns and treatments.

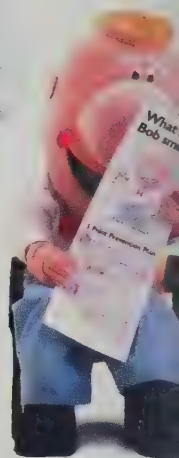


Take dental health to new heights! Awareness soars with colourful balloons that give little patients a real lift when it comes to taking care of their teeth.



Open wide and say

"Bob"... CDA's just-for-fun mascot is your perfect partner in promoting dental health. Rent our costume and have Bob drop by your office to keep patients of all ages smiling. While he's there, he'll want to pass around his vividly coloured posters featuring his five-point prevention plan for totally terrific teeth.



This could be the start of something big! Give your future patients a head start on a healthy smile with First Teeth, an informative brochure that helps Moms and Dads learn how to care for tiny teeth.



Dental health takes on new shades of meaning

with colouring books (with crayons!) featuring Bob and his five-point prevention plan. Let little patients express themselves while learning the art of caring for their teeth.



And there's so much more.

Make the most of Dental Health Month with tons of toothy toys and teaching aids from CDA. For more information, see our latest catalogue.



Call 1-800-267-6354 to order... or fax us at (613) 523-7736.

this design for several years — so make sure everything is the way YOU want it. A good designer will keep working until it's absolutely right.

Before concluding the design process phase, you should have a clear image of the look and cost of your renovation. Although it may be the most demanding phase of the project, the design process is worth the effort. If it's done well, the result will be an office that patients like to visit and that you enjoy working in.

We actually did one project in Edmonton where three-quarters of the planning workshops were conducted before the office space was ever leased. Based on the information we gathered, we were able to help the dentist identify what type of space would work best for his practice.

Operatory Design

Although it is an integral part of the design process, the design of your operatories merits special attention. Your operatories represent the cornerstone of your practice. As such, their design must support and complement the highly sophisticated ergonomic designs of today's manufactured dental equipment and service units. Size, access, lighting and storage must be considered in minute detail. Both staff and patients should be comfortable and able to move freely; a combination of natural and artificial lighting is recommended; and there should be adequate storage in a convenient location.

It's often beneficial to use the finishes selected for the reception area throughout the office. This brings the esthetic elements of design to the entire office space, and softens the transition from the reception to treatment areas.

Sterile Doesn't Mean Bland

The control of bacteria and dirt is essential in dentistry, but it shouldn't rule out designing an office with a variety of textures, colors and finishes. Fortunately, new materials and methods allow designers to do just this without compromising a clean, bright environment. A thoughtful design will:

- Integrate laboratory and sterilizing procedures into the overall office layout, while maintaining both necessary isolation and access to operatories;
- Incorporate surfaces that are cleanable and wear- and crack-resistant;
- Accommodate the flow of instruments;
- Be interesting and attractive without creating inaccessible dirt-harboring crevasses and recesses;
- Withstand the demands of long-term cleaning and equipment maintenance.

Air Quality

Modern buildings, with their advanced mechanical systems to control temperature, humidity and — to an extent — air quality, cater to the majority of their tenants. Except in medical-dental buildings, the demands of dentists are often in the minority. You may need to make adjustments to the basic climate-control systems to remove contaminated air and eliminate its circulation, or install flexible temperature controls to ensure the comfort of mobile staff and stationary patients.

Lighting

Lighting is another element that's worthy of special attention during the overall design process. In fact, lighting is both an art and a

science, and it takes years of experience to know exactly how to use lighting effectively.

When executed correctly, however, lighting can be soothing and pleasurable. As such, it can be used as a tool to ease the transition between the reception area and the operatories. But when lights are harsh or poorly placed, lighting contributes to eye strain and discomfort. Here are some points to ponder when you're incorporating lighting into your office design:

- A combination of natural and artificial lighting can create a warm, inviting atmosphere;
- Glare in the operatories can cause eyestrain and tension in you and your staff;
- Before you finalize a lighting plan, put yourself in the patients' chair — what do they see?

This advice doesn't attempt to cover all the details that must be considered in an office design, but we hope it serves to illustrate how working with a designer can make your office renovation easier, and the completed project more effective and enjoyable. ■

Harold Crittenden is a partner in Chomik Crittenden, a Calgary, Alberta-based firm specializing in architecture, programming and interiors.

DID YOU KNOW?

Ride That Greyhound

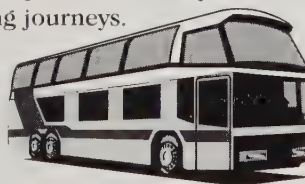
In 1914 Carl Eric Wickman opened a Hupmobile car dealership in Minnesota. When business was slow, he used one of the Hupmobiles to drive miners the four miles between the town of Alice and Hibbing, charging 15 cents per trip — 25 cents for the round trip.

The enterprise turned quite profitable — he made \$2.25 the first day — and by 1916 Wickman had expanded it to include long distance routes.

Wickman, ever the entrepreneur, painted the Hupmobiles grey to hide the dust during long journeys.

This prompted one hotel owner along the Hupmobile route to comment that they looked like greyhound dogs.

Wickman liked the idea and adopted the slogan, "Ride the Greyhounds."





"Team Dynamics 2000": Patient Care and Practice Management

Debra Engelhardt

*"As speed, quality and productivity become even more important, practices need people who can instinctively act the right way and who feel inspired to share their best ideas with their employers. The term "Value Decade" defines the integration of objective practice productivity with subjective human purpose."*¹

Truly understanding the Value Decade takes a change of mind-set, or inevitably, of paradigm: from thinking of patient care as dental treatment, to realizing that it also consists of providing services. Much of the quality movement can be understood as a push to build more service into patient care. In this regard, the very highest of standards of integrity and top-quality productivity will be critical to success.

According to Fortune magazine, "Many of the best businesses of the year 2000 will deliver not just services, but experiences."² In other words, you can turn technologies into solutions that allow you to introduce improved services quickly, and thrive in today's jittery economy and volatile health care climate.

Plan For Change

The world is moving too fast to try to define what will happen three to five years from now in specific, quantitative terms.¹ Instead, a practice should define its vision and its destiny in comprehensive but clear terms, and set goals to maximize productivity. It

should have the flexibility to react quickly to changing conditions and patients' demands, and be prepared for what it's going to take to survive, and thrive, in the '90s. To think imaginatively and act aggressively, and to break through the constraints of the required routines and circumvent the systems over which they preside, are two of the chief duties of dentists and managers in today's health care environment.

Because practices evolve and exist to do predictable work in treating their patients, they often create procedures and routines that tend to stifle innovation and impede progress. But along with establishing the necessary practice routines, and the duty to perform daily tasks with efficient and predictable reliability, the dentist should always ask: "Why Not?" and "What Else?"

Innovation has always been an axial characteristic of dentistry, and critical to the practice that strives to stay on the leading edge of the profession. It can be systematically fostered by organized research and development, and managed change.

How does the dental team determine what changes are appropriate for their practice? How do they know if their systems support the quality of care they strive to provide? What advancements in technology should be incorporated into their patient care protocol?

Simple measurements and standards of performance are critical elements in helping the dentist and the dental team to direct practice growth and manage change effectively. Too often, an office will measure everything and understand nothing.

The three most important things you need to measure in the dental office are patient satisfaction, employee satisfaction and cash flow. If patient satisfaction is growing, your practice is sure to grow, too. Employee satisfaction insures productivity, quality, pride and creativity. And cash flow is the pulse—the key vital sign—of any business.

Measuring Patient Satisfaction

When patients are satisfied in your office, they:

1. Accept treatment,
2. Refer their friends and associates,
3. Return for continuing care,

1. Treatment Acceptance

One of the most important statistics to monitor in your practice is your treatment acceptance rate. It indicates whether you are successfully conveying the quality of care you have to offer, so that your patients will say "Yes" to treatment, and make financial arrangements for that care. Your treatment acceptance rate (in production dollars) measured against your average diagnosis amount (in production dollars) will indicate your treatment acceptance rate percentage.



Dental offices should set a goal of reaching a 65 to 75 per cent case acceptance rate. This means that 65 to 75 per cent of diagnosed and proposed treatment is accepted by the patient. Ideally, treatment diagnosis and acceptance should be part of the planning information provided by your dental software program. It is an important indicator of your team's effectiveness in satisfying your patients.

This data should be reviewed monthly in a staff meeting. If you are not meeting your acceptance rate goals, you may want to reassess your new patient protocol to ensure that patients are introduced to the finest services you offer. Ask yourself these questions:

- Is the time scheduled for new patients to adequately build relationships and trust?³
- Are you taking advantage of the latest technology — an intraoral camera and graphic computerized charting system, for example — to enhance your diagnosis and communication?
- Have you made the patient a partner in his or her care through an excellent education process in your office?

Integrating new technologies such as a complete computerized management system insures consistency in treatment planning and supports treatment presentation. A common "combination" starter system is the AcuCam intraoral camera system and AcuChart system. When a practice decides to add digital X-ray units, they can also be integrated into AcuCam and AcuChart systems.⁴

This technology provides excellent management support by establishing sophisticated computerized standards for your office. In turn, this enables the office to be congruent in treatment philosophy and treatment planning, which strengthens the team's conviction to provide the best for their patients. This expression of strength in treatment philosophy inspires patients to want the standard of care you have to offer.

Your patients are not trained to judge your clinical skills by your crown margins. Therefore, your in-

formation systems must indicate the manner in which you provide care. Ask yourself these questions:

- Are your systems accurate examples of the standard of care your office provides? (Patients will not accept what they don't understand.)
- Do you supply information in such a way the patient understands your treatment recommendations?
- Do you offer visual aids that support your vision of the patients' dental future? (This helps patients, with their untrained eyes, to see the picture you see. You will experience a marked improvement in case acceptance by incorporating the latest information technology.)

Excellent business procedures indicate excellent dentistry. Visible state of the art techniques denote state of the art care. Your patients will determine your competence by your professionalism — the way your services are delivered.

2. Referrals

The best source of new patients is referrals from satisfied patients of record. A new patient is more likely to refer a friend or colleague soon after their initial visit. This is when they have the strongest feelings about your practice. Here, you should ask yourself:

- What have you incorporated into the new patient experience to demonstrate your above-average standards?
- Does your office protocol suggest that you are providing "leading edge" dentistry?
- Do you give your patients a quality experience that inspires them to tell their friends of your uniqueness?
- How do you set yourself apart from other practices with the latest techniques and quality assurance?

Your patient management systems will promote or deter patients from referring their family and friends. For example, if the patient is kept waiting for an appointment, or must schedule their appointments too far in advance, you may be suggesting that you are too busy to accept new patients.

If the business aspect of having dentistry done in your office is handled incompetently, the patient will not be truly satisfied with your care.

They will not refer new patients to your office, and may limit or decline their own treatment.

3. Continuing Care

Implementing innovation and assimilating new technology into your practice can be extremely helpful in terms of motivating and maintaining existing patients. Introducing positive changes in the office demonstrates your commitment to grow and improve, and proves to your patients that you continually strive to offer the best in technology.

Most offices strive to maintain 75 to 80 per cent of their patients in a continuing care program. The benefits of this production source are two-fold. It sustains the hygiene program in the office, at the same time as it maintains a source of potential new work for the dentist from existing patients.

If you have incorporated new techniques into your practice, or expanded the range of services offered, you need to inform your patients of these improvements. The best time to do this is during their continuing care appointment. You may want to perform a "renewal exam" with existing patients. This could be done in conjunction with an X-ray series update. Extra time would be scheduled to examine the patient's mouth, as though he or she was a new patient. The new patient protocol would be followed during this appointment, and the patient would be charged a recall exam fee. Obviously, he or she would have been informed during the visit prior to the renewal exam appointment that this would be done.

This type of appointment provides the dentist with an opportunity to look at the patient's mouth with new eyes and new vision. At the same time, new techniques learned since the patient's initial visit can be considered and discussed. This approach preserves the dentist-patient relationship. It also motivates the patient to accept treatment and keeps them coming back.

Introducing new technology to existing patients is a powerful educational tool. It allows both the dentist and auxiliaries to reiterate previously diagnosed treatment in



a brand new way. If your office has recently integrated intraoral cameras or computerized periodontal charting,⁴ they should be fully integrated into the continuing care program.

Employee Satisfaction

When it comes to creating change, direct, personal two-way communication makes the difference. It is important to expose your staff to ideas from everywhere. The way to get more productivity in your practice is to get people involved and excited about their jobs. Help them see the importance of their role in the total process.

Continuing education, staff meetings and ongoing training should be part of every office's routine. A well-trained, committed staff is as an asset to the practice and the dentist must continually invest in upgrading their knowledge and skills.

Teaching your team how to interpret management information allows you to carefully assess the practice and strategize accordingly. It also helps the staff to understand their specific roles in practice development and growth. Important practice data, shared at monthly team planning meetings, facilitates reasonable and achievable planning and increases team accountability.³

Keeping your staff involved in the latest trends in dentistry keeps them enthusiastic and prevents the dreaded "burn-out" syndrome. Advancements in technology engage the mind of every employee in the dental office. When you introduce patient care enhancements such as intraoral cameras, imaging, interactive video, digital X-ray, and comprehensive computer software, you involve the staff 120 per cent. You must believe that the combination of people and technology is the key to everything, and that change is not something you fear — it's something you relish.

Motivating Your Team

All teams function in a dynamic environment. They must learn to adapt and change with new technology. Resistance to change often occurs because:

1. people are unfamiliar with the facts surrounding the change — fear of the unknown,
2. they don't understand the advantages of change — "What's in it for them?,"
3. people don't trust the change agent,
4. the change was not initially asked for and they had no participation in the decision,
5. low self-esteem of the people who are part of the change,
6. change may reduce current proficiency in existing job,
7. people are creatures of habit, and
8. status is endangered.

Taking responsibility to develop change programs reduces the probability of resistance. The office should create a strategy that weakens the perceived link between change and negative consequences. The elements of successful change include:

1. sharing information on potential consequences, both positive and negative,
2. Allowing staff participation in planning for change,
3. providing a non-evaluative period — time to adjust,
4. using the "KISS" principle,
5. introducing change in logical steps,
6. ensuring the change is compatible with the organizational culture,
7. using appropriate sequencing and timing, and
8. keeping the lines of communication open at all levels.

Cash Flow

"If your only objective is cost reduction and not raising value, you will not engage the organization."² When looking at the financial structure of the practice, it is important to ask, "What office investments can I make that will meet my objectives to provide the best patient care, and be good management decisions?"

You are responsible to your patients for providing the best you can in service and technology. In order to do this, you must have sound business systems and a healthy cash flow. This requires that you prioritize your practice when determining your investment strategy.

Updating your present facility or even building a new one may be the ultimate plan for boosting your productivity. New equipment or techniques in your present location may have the same impact. If there is technology to help you do it faster, better or more effectively, it would be wise to invest.

When considering new technology, it would be prudent to conduct a cost analysis and projection of return on investment. For example, if you are considering purchasing a new computer software program, what are your expectations of performance? Will you reap the rewards in improved patient care, ease of operations, and maximizing productivity? Are you expecting to increase monthly production or collections? Be clear about your expectations and realistic about return on investment.

New equipment and technology will not improve your practice unless it's utilized. Statistics indicate that an intraoral camera can increase patient acceptance rate by as much as 30 per cent, when it's fully utilized. But it will not achieve this rate unless your team learns how to use the equipment and fully integrates it into their routine. This is true for sophisticated computer software and hardware, as well as for all management systems.

If you are disappointed in your return on investment for new equipment and technology, ask yourself:

- Have we fully implemented this system into the practice?
- Are we adequately trained?
- Did we allow for initial obstacles and plan how to overcome them?

Most advancements in dental technology have been successful in improving the bottom line for those offices that fully integrate all the features they have to offer. In fact, technology is one of the best investments you can make in your practice. With it, you have the potential to dramatically boost productivity and reap the rewards.

Diagnosing the Vital Signs⁵

A well-managed practice creates the freedom you need to centre its attention on providing superior patient care. Implement-

ing sound business principles and information systems allows the team to focus on satisfying the patient. It also provides the economic strength you need to afford the best facility and personnel. This satisfies everyone — the patient, the staff, and you, the dentist.

To direct your management efforts and prioritize your plan of action, certain elements of your practice should be analyzed, including production, collection percentage, accounts receivable ratio, continuing care, and new patient flow.

Production

If your actual production is lower than your goal, take a look at:

- vacation time,
- change in staff,
- low case acceptance,
- diagnosing the patient's pocket book,
- poor scheduling techniques,
- lack of new patients,
- lack of practice development program, and
- poor communication skills.

Collection Percentage

If your collection percentage is lower than 98 per cent on a three-month average, look at:

- rise in production,
- slow insurance turn around time,
- large bad debt write-off,
- excessive discounts,
- lack of clearly defined financial and collection protocol, and
- low collections at time of service.

Accounts Receivable Ratio

(Total accounts receivable divided by monthly production)

If the accounts receivable ratio is more than 1.5 : 2.0 take a look at:

- uncollectible bad debts not written off,
- extended credit on large cases,
- lack of follow through with financial and collection policies, and
- small payments made on large balances.

Continuing Care

If not at least 70 per cent of your patients visit your office for continuing care (recall appointments), take a look at:

- transient area,
- lack of control in recall system, and
- poor communication skills in following up with recall.

New Patients

If your actual new patient flow is lower than your practice goal, take a look at:

- lack of practice development program,
- lack of commitment on everyone's part,
- poor organization and routines, which discourage patients from referring,
- tension in office or inter-office problems, and
- unattractive or ill-equipped facility.

An audit of your systems will help you to quickly determine the health of your business. With this information, you can establish a plan to organize your practice management protocol to ensure patient satisfaction.

Processing Change

When evaluating the systems and preparing for new procedures in your office, there are four internal parts to consider:

1. **Objectives:** What are you trying to accomplish with the new system?
2. **Methods:** What steps must you take to implement the new system?
3. **Communication:** How will the system be presented to ensure its acceptance by staff? How will it be presented to ensure its acceptance by patients?
4. **Evaluation:** How will you know if you are doing the right thing? What yardstick will you use to measure results?

Incorporating these steps into your staff meetings will enhance the change process and increase acceptance of new management techniques and office systems. Establishing clear objectives, methods and ways to quantitatively measure results will improve your action and follow-through.

Are You Doing the Right Thing

As practices assess their patient care protocol and office management systems, they may consider how the needs of the patients and the practice may best be served through new techniques and technology. Two very important questions that will determine if you are doing the right thing are: Is it good for the patient? Is it good for the practice?

If you can answer yes to both of these questions, you can feel secure that you are doing what is appropriate for patient care and practice management. If you answer no to either question, then your plan should be re-evaluated to eliminate obstacles and to achieve a positive response.

Move Forward Or Fall Behind

Tom Peters says: "The battle for the consumer will be won by those who transform their concern for customer satisfaction into an unqualified obsession." Evaluating the recent advancements in technology — and how they may help you improve patient care — will ensure your safe passage through the Value Decade. What's new out there can either help or hurt you. You should be attentive to it. And everybody should try to develop the ability to interpret the pace, direction, meaning, and significance of what's happening in the industry today. As long as people are reasonably free to follow their own inclinations, there will be innovation, and people will continue to find ways to offer improvements on what is already available.

The constant in dentistry is innovation across the board, at all levels, regarding all tasks. This is the only way the constantly expanding requirements of dentistry can be served. No practice can survive without innovation, no matter how low-cost its production, as its neighbors move forward in service and technology. ■

Debra Engelhardt is a seminar leader and consultant, and is currently the president of the Academy of Dental Management Consultants. She is an ongoing instructor for Oregon Health Sciences Continuing Education, and conducts seminars for many professional associations.

References

1. Tichy, Noel M. and Sherman, S. *Control Your Destiny or Someone Else Will*. New York: Doubleday, 1993.
2. Managing. *Fortune*, May 17, 1993.
3. Engelhardt, D. How to Use a Computer to Motivate Staff and Increase Productivity. *Dentistry Today*, Feb. 1993, p. 88.
4. New Image Industries Inc., August 1993.
5. Bernhardt, C. *Advanced Practice*, 1986.



ABSTRACT (Pharmacology)

Continued from page 239. . .

The accompanying table (Table I) outlines some drug interactions of significance to dentistry. This table is not an exhaustive list of all drug interactions and it is prudent to research specific drugs for potential interactions.

The most commonly administered pharmacologic agents by dentists are local anesthetics and vasoconstrictors. The most likely drug interactions in dental practice are those involving the non-steroidal anti-inflammatory drugs, antibiotics, metronidazole, ethanol,

central nervous system depressants, vasoconstrictors, beta adrenergic blockers and oral contraceptives. It is important that dental practitioners are well acquainted with interactions involving these drug types. ■

Pallasch T.J., Dent. Today; Nov/Dec 32-37, 1993.

TABLE I

Drug Interactions

Interacting Drug	Adverse Effects	Mechanism
Acetaminophen Ethanol	increased liver toxicity	unknown
A.S.A. Anticoagulants, Ethanol Oral Hypoglycemics Lithium	increased bleeding hypoglycemia increased lithium toxicity	decreased platelet activity synergism reduced renal excretion
Antihistamines Erythromycin Ethanol	cardiac arrhythmias with terfenadine and astemizole increased CNS depression	reduced metabolism synergism
Cephalosporins Oral contraceptives Ethanol	reduced contraceptive effect disulfuam effect altered	altered metabolism metabolism of ethanol
Erythromycin Antihistamines Digoxin Oral contraceptives	cardiac arrhythmias with terfenadine and astemizole increased digoxin toxicity reduced contraceptive effect	reduced metabolism altered metabolism and absorption altered metabolism
Fluoride Polyvalent metals	reduced fluoride absorption	formation of insoluble complexes
NSAIDs Oral anticoagulants Ethanol Lithium	increased bleeding increased gastric bleeding increased lithium toxicity	decreased platelet activity synergism reduced renal excretion
Opioids Barbiturates Benzodiazepines MAO inhibitors	increased CNS depression increased CNS depression hypertension and encephalopathy with meperidine	synergism synergism not established
Penicillins Bacteriostatic antibiotics Oral contraceptives	decreased antibiotic activity reduced contraceptive effect	antagonism altered metabolism
Tetracyclines Antacids Bacteriocidal antibiotics Digoxin Oral contraceptives	reduced absorption and effectiveness decreased antibiotic activity digoxin toxicity reduced contraceptive effect	chelation antagonism altered metabolism and absorption altered metabolism
Vasoconstrictors Beta Blockers Tricyclic antidepressants	hypertension, ischemia hypertension	Beta blockade, alpha unopposed no re-uptake of norepinephrine

Reprinted with the permission of *The Dentaletter*, Vol. 12, No. 10.

Which costs does your health insurance cover?

\$11 a day - TV rental

\$3 a day - Phone rental

\$5 a day - Long distance

\$155 a day - Semi-private room

\$33 a day - Day care for her daughter

\$320 - Her flight from out of province

\$29 a day - Her parking costs

\$155 a day - Her hotel cost

\$45 - Flowers

\$15 a day - Babysitter for son

Hospital Cash Insurance Can Help

The problem with standard health insurance is that it only covers health expenses. But illnesses and accidents involve significant extra expenses that normally come out of your pocket.

That's where Hospital Cash Insurance comes in. It pays you a daily benefit if you're in the hospital for any reason, or for special situations such as outpatient cancer treatment. And a lump sum of up to \$10,000 if you are diagnosed with a serious medical condition such as cancer, heart attack or stroke. It's available as individual or family coverage.

Benefits are tax-free and you can use them however you wish. To fly in a relative to visit you in hospital. For day care or babysitting for your children. Or to help compensate for lost income.

Your benefits start the first or second day you're hospitalized. That makes Hospital Cash Insurance a perfect complement to Long Term Disability Insurance, since disability benefits don't usually begin right away.

Hospital Cash Insurance is being offered under the Canadian Dentists' Insurance Program because there's a real need. Nearly four in ten Canadians will develop cancer, one in three will develop heart disease, and one in four will suffer a disability from an accident. Add the chance of being hospitalized for other reasons, and you can see why Hospital Cash Insurance is important coverage.

So ask yourself if you're covered for all of the hidden costs of hospitalization. If not, call CDSPI and ask about Hospital Cash Insurance.



CDSPI

**CANADIAN DENTAL
SERVICE PLANS INC.**

100 Consilium Place, Suite 710
Scarborough, Ontario M1H 3G8

1-800-561-9401

(416) 296-9401

Extension: 236

238

234

Toll-free

Metro Toronto

Western Provinces

Ontario

Quebec and Atlantic Provinces



**CANADIAN
DENTAL
ASSOCIATION
L'ASSOCIATION
DENTAIRE
CANADIENNE**

FINANCIAL PROGRAMS DESIGNED BY DENTISTS FOR DENTISTS

The Modular Dental Management System, EXCEL, is endorsed by CDSPI. For information contact Zadal Systems Group Inc. Telephone 1-800-663-1236

"60 DAY TRIAL OFFER"



LOGICTECH

— COMPUTERS LTD. —

Fully integrated practice management system:

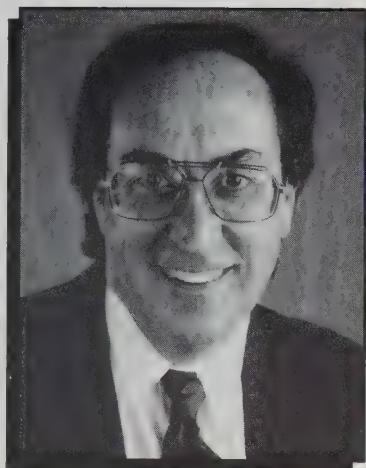


- Patient education modules
- Intra-oral camera images
- Hands free charting
- Digital x-rays



Microsoft & Windows are
trade marks of Microsoft Corp.

Servicing Canada wide - Call toll free 1-800-717-0792



The Computerized Point of No Return

Barry Freyberg, DDS

In audience interviews with thousands of dentists, I've learned one very important fact about practice automation: once a dentist opts to computerize his or her practice, there's no going back. In fact, I've never met a dentist who has chosen to re-institute a manual system after automating his or her practice.

When you consider that some dentists had very bad first experiences with computer systems (such as poor software or inadequate vendor support), it is truly remarkable, really, that none choose to go back to using a manual system. Instead, they make a new foray into the automation market to find a new and better vendor or a different software package that can do the job.

Why would they do that? They have just spent thousands or tens of thousands of dollars on a bad system, and thrown their offices into turmoil trying to train their staff to run it. Wouldn't the obvious response be to give up on automation in disgust? Why risk more expense and more training turmoil? What creates this against-the-odds commitment to technology that I observe so often?

This is an interesting question, and it's got me thinking. It seems to me that dentists reach a point of

no return once they automate. Even if the first systems they buy are failures, they see some value in automation that rules out any chance of going back to where they were before.

I think the point of no return for automation is defined by vision. Through their first interaction with automation, these dentists see that the old way, the manual way, is about the most inefficient and ineffective way to manage a dental practice imaginable.

How Automation Helps

Let me give you an example based on the all-too-familiar task of sending out statements. In manual practices, this is a dreaded, high-pressure work binge that creates havoc at the end of every month. Ledger cards are pulled, photocopied and checked for accuracy. Staff stay late stuffing envelopes, sorting them by postal code and running them to the post office. A few days later, the office is flooded with phone calls from patients asking about their accounts.

How does automation improve this irksome situation? Well, for starters, in a computerized office no one has to pull, check and photocopy charts. This saves a tremendous

amount of staff time, all on its own. Staff simply instruct the computer to generate statements overnight. When they arrive in the office the next morning, the statements are there — neatly stacked at the printer all ready to be mailed out. Even better, there is no reason why a computerized office has to limit itself to producing statements once a month. Today most practice management systems are smart enough to allow statements to be mailed every week, every other day or even daily. The computer automatically makes sure that no patient receives two statements in one month.

Using this approach, the large, cumbersome task of manual monthly billing is broken down into small, manageable chunks that can be done quickly and efficiently on a weekly or daily basis. With the work distributed throughout the month, there are no more late night marathons and last minute trips to the post office, and the cash flow of the practice improves.

New Ways of Thinking

When I talked about how automation makes it so much easier to send out statements, I also touched on how computer systems can create opportunities for new ways of

JOURNAL

March/
Mars
1995
Vol. 61
No. 3



doing things in a dental practice. Even in automated offices, where statements can now be prepared more or less any time, most dentists still only send them out once a month. Why? Because that's the way they've always done it. But is it the only way, or even the best way? Automation certainly allows us to be more efficient than we ever were before. What many dentists miss, however, is that automation also allows us to do new things as well.

Schedulers are a good example. Some dentists look for electronic schedulers that work just like their old paper books did, but there's no practical reason for using this format at all. Dentists who use more flexible software find that they can keep track of cancellations, no shows and short-notice possibilities, schedule their time to meet financial goals, and generally do more than they ever could with paper books.

Decentralizing the Dental Office

Once dentists start realizing that computer systems allow them to do much more than automate what they used to do manually, it isn't long before they start thinking about the possibilities of integrating automation into the overall management of their practice. And here's where automation can really pay off — in decentralizing the dental office.

The front desk in many dental offices is the highest stress area in the practice. Think about it. Front-desk staff are responsible for greeting and dismissing patients, scheduling and confirming appointments, recording charges, updating names and addresses, writing letters, and more — usually all at once and with the telephone ringing. Most dentists respond to their front-end crises by hiring additional staff, but this comes at the expense of what happens in the operatories.

With a decentralized office, however, tasks can be redistributed so that — for the same payroll — you can afford more staff in the productive areas of the practice. Decentralization also reduces du-

plication, increases accuracy and productivity, and improves the atmosphere of the workplace by reducing unnecessary stress.

Let me expand on this a little. In a manual practice and even in many automated ones, the assistant writes up notes on charges or treatment plans. She then walks to the front desk with the patient, who stands there while the data are recorded. Since the assistant has already written everything down once, it makes little sense to have someone else copy it all over again while the patient waits. Now consider what could happen in a decentralized office with computer terminals in the operator. The assistant can enter the information directly into the practice computer, eliminating the need for duplication and reducing or eliminating inconvenience to the patient.

The double entry of treatment plans, charges, recall status, scheduling, medical histories, names and addresses, personal messages and a host of other items can all be eliminated by automation, resulting in greater efficiency and more accuracy. There's another advantage too. The people at the front desk now have the time to greet and dismiss patients with a smile, and to pay them the attention they need to feel good about your practice.

In-operatory terminals also help to assure cross-training. Computers become part of the office itself, to the point where all staff members know enough about it to keep things running smoothly when a co-worker goes on vacation or leaves the practice.

Let's summarize a few of the main points to remember about decentralization through the use of in-operatory terminals. First, decentralization means integrating automation into the management model of the practice. By redistributing tasks and eliminating dual record entry, i.e. in the operator and later at the front desk, decentralization eliminates the bottleneck that traditionally occurs at the front desk. Patient information is accessed and updated chairside, and it's ready and waiting at the front desk so that patients don't

have to wait as long and staff members have the time to pay them some personalized attention.

There's No Going Back

I've found that dentists who opt to use in-operatory terminals to decentralize have the same attitude toward automation as dentists who change from manual to automated practices: they never go back to a front-desk office.

The other advantage of practice automation, of course, is computerized claims processing, or Electronic Data Interchange (EDI). With the development and implementation of CDAnet, insurance claims can be adjudicated in minutes — before the patient leaves the office.

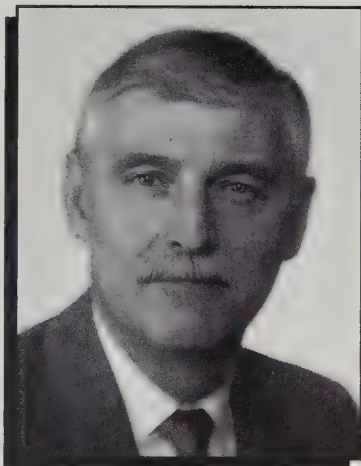
Looking To the Future

I think the use of in-operatory terminals will increase dramatically in the future. This move will be driven in part by the increased use of electronic insurance claims. Charting, radiovisiography and the combining of visual images with patients' text records will all become increasingly common. In addition, as clinical and management software begin to interact and share the same hardware, the link between the two will become more and more seamless.

How should you prepare for the electronic future? Automate, and move the data-entry function from the front desk into the operator. With good software, good training and good technical support, you'll never go back. ■

Dr. Barry Freyberg is a full-time general dentist, a practice analyst with ExperDent Consultants, and one of dentistry's foremost lecturers on automation. He is co-author of *Selecting a Dental Computer: A Step-By-Step Workbook*, the third volume in CDA's "Taking Care of Business" practice management program. The workbook will be available from CDA this summer. Call 1-800-267-6354 for more information or to order your copy.

Dr. Freyberg can be contacted through ExperDent Consultants, at: 80 - 10551 Shellbridge Way, Richmond, BC V6X 2W9; or at his office, at: 4833 Church St., Skokie, IL 60077.



Patient Education: The Key To a Successful Practice In Turbulent Times

Jim Gommerman

While no one can predict with absolute certainty what the future holds for the dental profession, it is highly likely that storm clouds are forming on the horizon.

Many soothsayers are looking into their crystal balls and seeing some very disagreeable conditions beginning to form just beyond the skyline. They now predict that dental insurance coverage will be significantly reduced in the years to come or even eliminated altogether as a method of underwriting the expense of dentistry to the patient.

This could come about in a number of different ways. Corporate North America, which has just been ravaged by a very severe recession, is re-examining every expense on its income statement. Not a single expenditure or employee benefit is sacrosanct. Employee benefit packages, negotiated in more prosperous times, are being scrutinized to determine how their effect on the bottom line can be reduced. To cut premium costs and at the same time leave the illusion of a benefit, companies will likely begin scaling down the percentage coverage for different treatment procedures until it provides employees with just a fraction of the protection they now enjoy.

Unions, which had the upper hand in negotiations with once profitable companies, are now

scrambling to justify their dues. In order to put more disposable income in the hands of members, union leaders are "liquefying" benefit packages under the guise of extracting more money from exhausted companies.

Governments are getting into the act as well. The governments that overspent in the boom years, while running up enormous deficits, desperately need additional revenue to cover the shortfalls, and are contemplating taxing insurance premiums and/or benefits as a method of raising money.

Conversely, the gloom-and-doom forecasts have been rejected by certain dentists, who suggest that insurance coverage cutbacks will have little or no effect on their practices — even if they become a reality. These dentists have come to the realization that their patients are fully educated dentally, and will accept the prescribed treatment plan regardless of the cost involved. Insurance has become only a means of payment in these practices, as patients base their decisions on health needs, not ability to pay.

Whatever the future holds, it is obvious that change will occur. And when it does, the many dental practices that rely heavily on insurance as a means of persuading patients to accept proposed treatment plans will find it difficult to succeed financially. Clearly, if the

profession is to remain vital and healthy, solutions to these potential obstacles must be found.

In team sports, the difference between a very good coach and an exceptional one is often the ability to ensure that the players within his or her control are well disciplined in the rudiments of the sport, and can execute them with precision. When the team encounters difficult situations, it returns to the fundamentals and adapts appropriately.

Using this strategy, it should be beneficial to examine the integral nature of the patient-practitioner relationship and design a plan to overcome any future dilemmas. Here, the essential question that must be asked is, "Why do patients visit a dentist to begin with, and what are their concerns?"

The answer is straightforward. Whether patients realize it or not, the most central purpose for visiting a dental office is not to seek relief from their pain, but to have their health treated. If dentists can accept the legitimacy of this assertion, then answers to the dilemmas facing the profession can be found.

At the outset, it must be determined whether the patients' awareness is subliminal. If this is the case, the dental office team has an obligation to increase the overall level of consciousness of patients through education. When the level of dental knowledge is

JOURNAL

March/
Mars
1995
Vol. 61
No. 3



sufficient, patients become more open-minded about approving a diagnosis and subsequent treatment plan.

The traditional apprehensions of dental patients have always been fear of the drill and fear of the bill. In fact, concerns about the drill are no longer valid, as considerable advances in science have done plenty to minimize the pain connected with dentistry. However, because fear is of a cerebral nature, a small number of people are still afraid of visiting the dentist.

Fear of the cost of dentistry was largely alleviated by the introduction of dental insurance in the 1960s. The growth of third-party plans provoked a wave of demand and opened the treatment door to a large number of patients who might not otherwise have been examined by a dentist, except on an emergency basis. Many dentists, however, began to rely on the availability of insurance coverage — rather than treatment necessity — to gain patient acceptance. With time, there was a tendency for treatment plans to include only those procedures covered by the patient's plan, rather than present all of the available alternatives. This practice has since placed a number of dentists into the courtroom as defendants, primarily because treatment decisions are essentially made for the patient and not by the patient.

Dentists who use thorough patient records have found that they provide an excellent medium for patient education. While the primary motivation for implementing them in their practice was protection against potential patient litigation, a fascinating discovery was made as dentists began to use them. Patient acceptance of treatment plans increased, sometimes substantially.

On further investigation, it was found that the patients' knowledge about dentistry, as well as their respect for the profession, increased with the thoroughness of the health history and initial clinical examination conducted by the dentist. Albeit unintentionally and indirectly, dentists were elevating their patients' level of awareness

"Fear of the cost of dentistry was largely alleviated by the introduction of dental insurance in the 1960s."

of the vast amounts of knowledge and training required to become a dentist, thereby leading patients to acquire a higher regard for their practitioner. In turn, patients were able to make treatment decisions based on complete information and a judgment in which they had confidence. The dentist was perceived as an authority who specialized in the mouth, but treated the entire body.

A comprehensive patient record accomplishes multiple tasks. For example, because it involves collecting extensive health history data, it protects the patient from possible medical misadventure. At the same time, it protects the dentist from potential litigation, educates the patient, and ensures that the dentist is in compliance with existing legislation.

In some ways, this scenario could also be used to illustrate the picture of a dentist in the pre-insurance age. Dentists in those times created demand by educating their patients to the need for dentistry, and in particular on how it applied to their overall health. As there was little dental insurance in those days, patient education and the persuasive abilities of the dentist were the dominant characteristics of the patient-dentist relationship. While the process may have been slower, the result was a much more committed patient.

It is a widely accepted view that the general public today is much more cynical than in the pre-insurance age. Consumerism has had a great impact on attitudes. Broken promises, as well as bad and defective products, have certainly contributed to the malaise. People

want to feel that they haven't been cheated or deceived, and that they've paid an honest dollar for a dependable product or service. When consumers purchase a good or service in today's environment, they want to know everything about it prior to making a decision. Trust must be earned.

Not surprisingly, dental patients feel much the same way about health services as they do about other arrangements, particularly when the expense comes from their own pocket. Therefore, after a patient has been diagnosed, every option and alternative should be explained. Not only does the patient, parent or guardian wish to have this information before making a decision, there is a legal requirement to provide it. The key, here, is for the dentist and the patient, parent or guardian to arrive at a state of informed consent. For example, the parent of a child whose incipient caries was treated by restoring the decayed teeth would likely be most upset to discover that these same teeth could have been treated with an antimicrobial agent and therapy, and may have subsequently healed themselves. This requirement is an excellent argument for dentists to continually keep up with current procedures and technology.

Should you wish to implement a patient education strategy in your office, the following steps can be used effectively to phase in this process:

1. Your team members should be made aware of the fiduciary nature of the relationship between practitioner and patient. The Dentistry Act in your area spells out these requirements. Thoroughly discuss the concepts involved with your team members, as their cooperation will be critical to successful implementation. With their assistance, develop a plan of action by examining every potential opportunity for patient education within the day-to-day routine of the practice. An example of one such opportunity is the development and use of very thorough docu-

Look At ABELDent Now!

The screenshot displays the ABELDent software interface. The top window is titled 'abel - 00251 - MACKEY, Louis' and contains a menu bar (File, Edit, View, Window, Reports, Options, Help) and a toolbar. Below this is the 'Appointment Scheduler - 13/JUL/93' window, which shows a grid of appointments for three dentists: R - Louis Reed, D.D.S., T - Patricia Thomas, D.D.S., and B - Beth Fallow. The grid lists appointments from 08:00a to 10:30a. Below the scheduler is a patient information form for '00251 - MACKEY, Louis'. The form includes tabs for Personal, Health, Insurance, Treatment, Appts, Notes, Extra, Imaging, and Xrays. The Personal tab is active, showing fields for Last Name (Mackey), First Name (Louis), Charge to (00000), Resides With (00000), Address (3310 South Service Road), City, Province (Burlington, Ontario), Postal (L7N-3M6), Home Phone ([905]333-3200), Work Phone ([800]267-2235), and a photo of the patient. To the right of the forms is a control panel with buttons for OK, Cancel, Help..., Search..., Next, Today, and navigation arrows for Day, Week, and Month views, along with a Date from field and a Font... button.

Take a look at the new ABELDent for Windows Graphical User Interface (GUI) version! It has all the features you have come to expect from ABELDent, plus you will be able to integrate to intra-oral cameras and radiovisiography systems and even store those images right in your patient file. Unlike other Windows systems, ABELDent for Windows can handle your CDAnet claims today. With over a thousand dentists using ABELDent to process CDAnet claims, no other

competitor even comes close.

ABEL has been automating health care providers since 1977 and over 6,500 health care providers rely on ABEL software to run their practice. If you have not seen ABELDent lately, you should take a look at us now! For a free, no obligations demonstration of the newest version of ABELDent call **1-800-267-ABEL (2235)**.

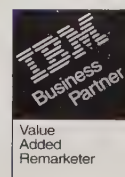


ABEL

Computers Ltd.

3310 South Service Road
Burlington, Ontario L7N 3M6

1-800-267-ABEL



What does a phone call to the CDA Library get you?



A whole world of information!!!!

Medline Computer Searches • Reference Services
Information Packages • Videos • Books and more.

Call: 1-800-267-6354 ext.223



CANADIAN
DENTAL
ASSOCIATION

mentation procedures, as described earlier. This can be initiated on a patient's very first visit or recall. Many offices also have a patient bulletin board where they pin up information regarding recent advances in technology or other interesting newsworthy items. Recent articles on the effects of drug use, as it pertains to dentistry, sterilization use, or the effects of antibiotics on contraceptives may be of interest to your patients. Make sure your patients know about your bulletin board, and be sure to update the posted information. It would also be wise to investigate the use of such devices as audio visual tapes and intraoral cameras. Clients advise that these products are extremely effective in case presentations.

2. Re-educate your team by making sure they understand the purpose behind certain required information and procedures. If staff members do not grasp the rationale behind a certain question, they may inadvertently pass on a negative response to the patient. For example, take the case of the receptionist who says to the patient, "I don't know why they need to have all of this information, but fill it out anyway, please." The patient is

left with the impression that the health history is superfluous, and may begin to object and grumble. But if you instruct your team about the need for these questions, and why they're important, they can then communicate that need purposefully and confidently to the patient.

3. Effective implementation requires each team member to know their own role as well as the roles of other team members. Techniques can and should be rehearsed until the dentist is confident that what is being said is accurate, and that the team member is not fumbling for words to communicate a message. A technique to get the patient's attention and convey the importance of accuracy when completing the health history is to inform the patient of a risk he or she is unlikely to have knowledge of. For example, some patients may be at risk for infective endocarditis unless they take medication prior to receiving dental treatment. The notification method ensures that the seriousness of the health history is relayed to the patient immediately, and will most likely eliminate any grouching about the length of the health questionnaire.

Not every person will become a patient or accept treatment. No key can unlock a closed mind. However, an educated patient will become committed, and a committed patient will not economize at the expense of their overall health. At the same time, the cost of treatment will still be a very significant ingredient in the patient's decision-making process. It therefore pays to implement convenient financial arrangements. In addition, it must always be recognized that the decision to proceed can only be made by the patient or the person with authority for the patient. If the patient or guardian is not given all of the information required to make a decision, he or she may become doubting and perhaps suspicious. On the other hand, should that person be utterly and completely informed, his or her decision to proceed is highly probable. Not too different from ourselves, when we make purchases, is it? ■

Mr. Jim Gommerman has been associated with dentistry for almost 25 years. He currently owns a Safeguard business system distributorship in Burlington, Ontario, which designs and provides extensive records management systems for dental offices.

Matthew is working on a cure for MS

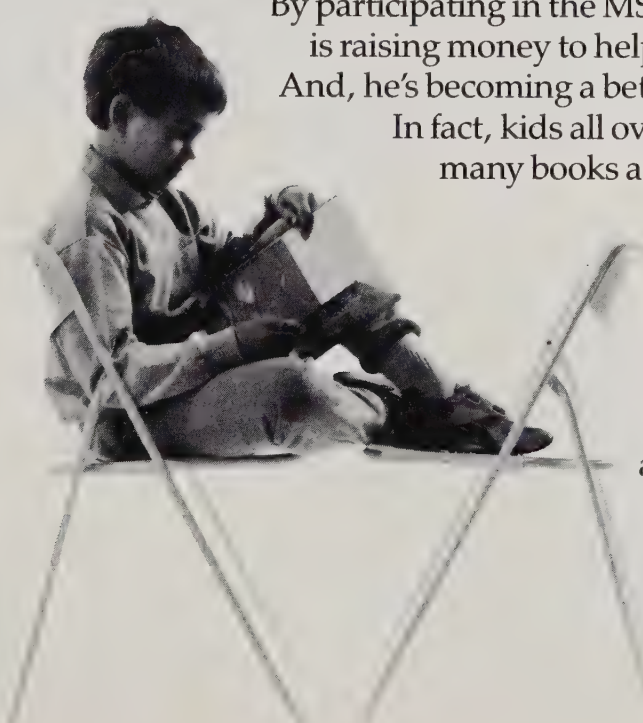
By participating in the MS Read-A-Thon, Matthew is raising money to help fight multiple sclerosis. And, he's becoming a better reader in the process.

In fact, kids all over Canada are reading as many books as they can. And for every book they read, they're asking parents, friends and neighbours to pledge donations to MS.

Please support the children. And, if you are a parent, encourage your child to participate.

To find out more about the MS Read-A-Thon and when it will be happening in your area, contact:

MS Society of Canada
National Office
250 Bloor St. E., Ste. 820
Toronto, Ontario M4W 3P9
Tel.: (416) 922-6065
Fax.: (416) 922-7538



Multiple Sclerosis



Simple VS Complex

**STANDARD DENTAL
CLAIM FORM**

PART 1 DENTIST				UNIQUE NO.	SPEC.	PATIENT'S OFFICE ACCOUNT NO.	I HEREBY ASSIGN MY BENEFITS PAYABLE FROM THIS CLAIM TO THE NAMED DENTIST AND AUTHORIZE PAYMENT DIRECTLY TO HIM/HER.
P A T I E N T	LAST NAME		GIVEN NAME		D E N T I S T	SIGNATURE OF SUBSCRIBER	
	ADDRESS		APT.				
	CITY	PROV.	POSTAL CODE				
PHONE NO.							
FOR DENTIST'S USE ONLY, FOR ADDITIONAL INFORMATION, DIAGNOSIS, PROCEDURES, OR SPECIAL CONSIDERATION.						I UNDERSTAND THAT THE FEES LISTED IN THIS CLAIM MAY NOT BE COVERED BY OR MAY EXCEED MY PLAN BENEFITS. I UNDERSTAND THAT I AM FINANCIALLY RESPONSIBLE TO MY DENTIST FOR THE ENTIRE TREATMENT.	
						I ACKNOWLEDGE THAT THE TOTAL FEE OF \$ IS ACCURATE AND HAS BEEN CHARGED TO ME FOR SERVICES RENDERED. I AUTHORIZE RELEASE OF THE INFORMATION CONTAINED IN THIS CLAIM FORM TO MY INSURING COMPANY/PLAN ADMINISTRATOR.	
DUPLICATE FORM ☐						SIGNATURE OF PATIENT (PARENT/GUARDIAN)	
OFFICE VERIFICATION / DENTIST'S SIGNATURE							

DATE OF SERVICE			PROCEDURE CODE	INTL. TOOTH CODE	TOOTH SURFACES	DENTIST'S FEE	LABORATORY CHARGE	TOTAL CHARGES	INSTRUCTIONS 1. EMPLOYEE COMPLETE PARTS 2 AND 3. 2. HAVE YOUR DENTIST COMPLETE PART 1. 3. IF YOU WISH BENEFITS TO BE PAID DIRECTLY TO THE DENTIST, SIGN THE ASSIGNMENT PORTION OF PART 1 ABOVE. ASSIGNMENT OF BENEFITS IS IRREVOCABLE. 4. SEND THIS CLAIM TO:
DAY	MO.	YR.							

Submitting insurance claims has never been easier! With one press of a button, **CDAnet** links your practice to a network of dental insurance carriers to provide immediate confirmation of claim receipt or on-line adjudication.

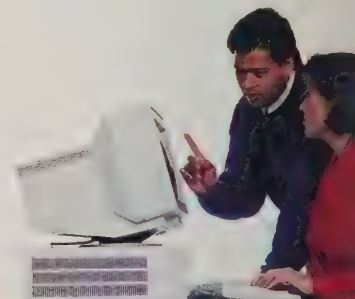
This easy-to-use electronic claims processing system, developed by the Canadian Dental Association, has no transaction or user fees.

Designed by dentists for dentists, **CDAnet** puts you on the information superhighway and simplifies claim processing by eliminating complicated paperwork. Immediate claims processing means greater efficiency and improved cash flow.

To find out how you can take advantage of the information age and put **CDAnet** to work for you, call 1-800-267-9701.



**CANADIAN
DENTAL
ASSOCIATION**



CDAnet

**Dentistry's National
Information Network**

CDA Access Ads

CDA ACCESS ADS offer guaranteed access to Canada's largest audience of dentists. To place your ad, call **Neil McGillivray** toll-free across the country at **(800) 661-5004**. In the Toronto calling area, please dial **(905) 278-6700**.

Replying to a CDA Access Box Number? Simply write to:
CDA Access Box ____,
1382 Hurontario St.,
Mississauga, Ont. L5G 3H4.
Or you may fax your reply to (905) 278-4850, noting the appropriate box number.

Offices & Practices

BRITISH COLUMBIA - Nanaimo: Exceptional opportunity/location for sale - First-class dental office in busy major shopping centre, five operatories, high new patient flow, great history and even better future expected. Located in Nanaimo, B.C., one of the fastest growing cities in Canada, with a great recreational environment on the ocean. Call (604) 756-1200 day or (604) 756-1082 evenings. (04/03)

BRITISH COLUMBIA - Trail: Established family practice in stable industrial economy with superb recreational opportunities. Prime location. Low overhead. Modern equipment. Owner retiring. Phone (604) 362-9426 (evenings). (06/13)

BRITISH COLUMBIA - Lower Mainland: Pacific flyway for sale. Profitable, well-established, health-centred, non-traditional general practice opportunity with crown and bridge emphasis. Here the famous visitors are snow geese travelling between the Arctic and South America. The municipality offers some of the best quality of life in British Columbia. Please respond with curriculum vitae and written vision of your preferred future to CDA ACCESS Box # 2652.

(12/03)

BRITISH COLUMBIA Burnaby

For sale, busy, well established family practice. Low overhead, 30-40 new patients per month, owner relocating to Kelowna. Price \$170,000.

Call **(604) 879-7596**

or reply to

CDA ACCESS Box # 2658. (02/04)

BRITISH COLUMBIA Fraser Valley

Profitable, modern, well established practice in beautiful facility. Country living with easy access to big city amenities. \$600,000 Gross - 4 day week.

Message/Fax: **(604) 852-9420**

or reply to

CDA ACCESS Box # 2659. (02/04)

BRITISH COLUMBIA East Vancouver

For sale, established family/general practice. Dentist wants to retire by early 1995. Excellent patient flow.

Eight-year-old practice with three operatories. \$400,000 gross with low overhead. Contact:

Bing C. Wong & Associates Ent. Ltd.

(604) 682-7561. (12/03)

BRITISH COLUMBIA East Vancouver

Established general practice for sale.

Good recall program with full-time hygienist, four-day week, grossing \$400,000. Dentist will stay on as part-time associate. Please reply to

CDA ACCESS Box # 2661. (03/03)

FOR INFORMATION ON B.C. DENTAL PRACTICES FOR SALE CALL

Health Pro Realty Ltd.

(604) 538-7838

Suite #239 - 1959 152nd Street,
White Rock, B.C. V4A 9E3

ATTENTION:

Dentists Who Are Serious Climbers, Hikers & Skiers

Brand new turn-key dental clinic available immediately in Canmore, Alberta - in beautiful Rocky Mountains. Affordable entry fee (\$25,000).

Phone (403) 823-2582 days or (403) 823-4406 evenings. (03/03)

ALBERTA - Edmonton: For sale! Thriving practice, up-market location. Strong existing revenue flow. Computerized, Pan, four ops, plus. Owner returning for postgraduate training and will assist in transition. Phone (403) 452-5700 Tuesday to Friday. (03/04)

SASKATCHEWAN

Practice for sale or Locum Required

Moderate income practice for sale, all new equipment.

Progressive surroundings.

Please reply to

CDA ACCESS Box # 2645. (11/13)

MANITOBA - South Central Region: General practice for sale. Comfortable driving distance from Winnipeg. High gross, reasonable overhead, diverse workload, Pan/ceph equipped. Please reply to CDA ACCESS Box # 2660. (02/04)

DENTAL OFFICE SPACE

Lindsay, Ontario

Modern, newly decorated dental office in downtown. 750 sq. ft. ground floor.

Fully plumbed and wired. A dental office for more than 25 years. Available April 1st, 1995. An excellent opportunity to start a practice in a progressive town.

Phone (705) 324-6196. (03/04)

NOVA SCOTIA: Halifax: For Sale: a growing dental practice located in a

high-income suburb of Halifax. Low rent and overhead expenses. A-dec equipment. Visible location. Patient flow is rapidly increasing. High patient retention. An excellent opportunity for a specialist who wants to have his/her own practice or for a general dentist looking for a growing patient-oriented practice. Call: (902) 835-3005. (03/05)

**NEWFOUNDLAND
Scenic West Coast
Practice for sale.**

Preventive-oriented family practice - high gross, low overhead. Great location - close to downtown. Great outdoor activities, close to skiing, golf course. Please reply to
CDA ACCESS Box # 2636. (09/03)

Professional Services

CHARTERED ACCOUNTANT

Let me assist you as your
Business Advisor.

Financial statements, tax planning, business and loan proposals, general business consultation. Eager to provide high quality, friendly service at reasonable rates. Call:

(416) 282-4240 for quotations. (11/13)

Positions Available/Sought

YUKON - Whitehorse: Associate required for Klondyke Dental Clinic. If you enjoy modern city amenities and the great outdoors you are welcome to join us as a general dentist associate, or in the capacity of a children's dentist. Contact Dr. Pearson at (403) 668-4618. (02/04)

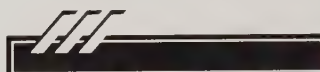
BRITISH COLUMBIA - Victoria: Associate wanted with view toward a future partnership for a pedodontist. Must be caring, hard-working individual. Position available after December 1995. Your future has unlimited potential with a great lifestyle and the best climate in all of Canada. Please call (604) 744-1065 after 6 p.m. (02/04)

BRITISH COLUMBIA - Prince George: Associate wanted. Looking for a motivated conscientious associate to work with owner in a large, very modern practice located in a rapidly growing university community in north central B.C. Excellent

**ACCOUNTING & TAX SERVICES
FOR B.C. DENTAL PRACTICES**

- Incorporations
- Buying/Selling
- Family Trusts

300 - 2000 West 12th Avenue
Vancouver, B.C. V6J 2G2
(604) 736-6581



**MCCONNELL
GALLOWAY
BOTTESELLE**

National Affiliate
Porter Hétu



opportunity to increase a new graduate's clinical and practice management skills. For information call (604) 964-6700. (10/13)

BRITISH COLUMBIA - Nanaimo: Excellent opportunity for an associate to work as a sole dentist in a retail dental practice, experience an asset. Opportunity to buy-in starting on February 1, 1995. Located in Nanaimo B.C. Great growth, recreation and lifestyle on the ocean. Call (604) 756-1200 days, or (604) 756-1082 evenings. (12/03)

BRITISH COLUMBIA - Comox: Associateships. Do you want to work in a quality Vancouver Island community? Motivated and experienced associate required for a spacious, modern, well established office. Would suit individual with interest in practice management skills. Opportunity of business association in the near future for the right individual. Contact: Tel: (604) 339-4044 Business Hours; (604) 339-2342 Evenings and Weekends. (01/03)

BRITISH COLUMBIA - Victoria: ASSOCIATE OPPORTUNITY. Take over existing patient base in a very busy, large, computerized four-dentist practice. Extended hours, family practice. Must be experienced, outgoing and motivated. Position available immediately. Call Dr. Don Bays (604) 381-6433 (O), (604) 595-8050 (H). (01/03)

BRITISH COLUMBIA - Chilliwak: Associate desired to help take care of the patients in a beautiful family practice. Long-term commitment with partnership as a goal. Call Dr. Deborah A. Hallinan, Home: (604) 795-3077, Office: (604) 792-3324, or write: 102-9123 Mary Street, Chilliwak, B.C. V2P 4H7. (03/05)

BRITISH COLUMBIA - Penticton: Associate needed in the Spring of 1995 for a growing dental practice. Please reply to: Dr. Ronald A. Johnson, #109-1301 Main Street, Penticton, B.C. V2A 5E9. Phone: (604) 493-0020, Fax: (604) 493-1986. (03/05)

ASSISTANT PROFESSOR

Faculty of Dentistry

Department of Clinical Dental Sciences

The University of British Columbia

Applications are invited for a full-time Assistant Professor tenure-track position in the Division of Preventive and Community Dentistry in the Department of Clinical Dental Sciences. Responsibilities for the position include participation in and coordination of undergraduate teaching in preventive and community dentistry and the further development of research related to the discipline. Candidates should have a proven record of teaching and research and be eligible for licensure with the College of Dental Surgeons of British Columbia. One day per week is available for private practice.

The starting date is **July 1, 1995** or as soon as possible thereafter. Salary will be dependent on qualifications and is subject to final budgetary approval. The University of British Columbia welcomes all qualified applicants, especially women, aboriginal people, visible minorities and persons with disabilities. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada.

Candidates are requested to forward a letter of application (including the names and addresses of three referees whom the selection committee may contact) and a curriculum vitae **prior to May 1, 1995**. Applications or further enquiries should be directed to:



Dr. Alan A. Lowe, Professor and Head
Department of Clinical Dental Sciences
Faculty of Dentistry
The University of British Columbia
2199 Wesbrook Mall
Vancouver, B.C. V6T 1Z3
Telephone: (604) 822-3414
Fax: (604) 822-3562
e-mail: alowe@unixg.ubc.ca

ASSISTANT PROFESSOR

Faculty of Dentistry

Department of Clinical Dental Sciences

The University of British Columbia

Applications are invited for a full-time Assistant Professor tenure-track position in the Division of Prosthodontics in the Department of Clinical Dental Sciences. Responsibilities for the position include participation in and coordination of undergraduate teaching and possible future graduate programs in prosthodontics and the further development of research related to the discipline. Candidates should have a proven record of teaching and research and be eligible for specialty certification in prosthodontics with the College of Dental Surgeons of British Columbia. One day per week is available for private practice.

The starting date is **July 1, 1995** or as soon as possible thereafter. Salary will be dependent on qualifications and is subject to final budgetary approval. The University of British Columbia welcomes all qualified applicants, especially women, aboriginal people, visible minorities and persons with disabilities. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada.

Candidates are requested to forward a letter of application (including the names and addresses of three referees whom the selection committee may contact) and a curriculum vitae **prior to May 1, 1995**. Applications or further enquiries should be directed to:



Dr. Alan A. Lowe, Professor and Head
Department of Clinical Dental Sciences
Faculty of Dentistry
The University of British Columbia
2199 Wesbrook Mall
Vancouver, B.C. V6T 1Z3
Telephone: (604) 822-3414
Fax: (604) 822-3562
e-mail: alowe@unixg.ubc.ca

BRITISH COLUMBIA - Vancouver:

Highly motivated dentist is seeking a full-time position in a quality dental practice located in Vancouver (with associateship or buy-in potential in the future). I am a young dynamic dentist with a pleasant personality and good clinical skills. I have two years experience since my graduation at the University of Montreal. Please call or leave a message (418) 692-1723 or reply to CDA ACCESS Box # 2662. (03/05)

JUMP-START YOUR CAREER!

Become an associate at our busy dental office in beautiful Red Deer, Alberta. A tremendous learning experience, working with a great staff.

Call today
(403) 346-9122. (03/05)

CENTRAL ALBERTA - RED DEER

Successful and well-managed practice seeks an experienced yet conservative dentist who sincerely cares about patients and is a team player.

Please contact Fran Holler at
(403) 347-8008. (02/04)

ALBERTA - NORTHERN REGION

Wanted, associate for growing practice, bustling and prosperous community. Previous work experience an asset but not a requirement. One hour air time from Edmonton.

Please reply to
CDA ACCESS Box # 2656. (01/03)

ALBERTA - Medicine Hat: Full-time associate required to start May/June 1995. Require above average academic achievement, good character, socially responsible with a deep concern and commitment for the care of others. Modern and spacious family-oriented clinic features 16 operatories and is well located in a busy and growing community. Please call Kevin at (403) 526-0777. (11/03)

ALBERTA - Calgary: Associate wanted to share dental space and expenses. Modern group practice, central location, preventive-oriented emergency service, extended hours. Requires two dentists to purchase part of dental clinic and share expenses. Send C.V. to CDA ACCESS Box # 2663. (03/05)

SASKATCHEWAN - Rosetown:

Associate wanted. Excellent opportunity for a full-time associate to work with a well-established practice, part time in Rosetown and part time at a satellite practice in Eston. If you are a highly motivated dentist looking to work in a progressive environment (fully computerized, highly trained team members ...) away from the city (yet easily accessible to Saskatoon), we would like to hear from you. Buy-in potential exists for the right candidate. Please contact Dr. Glenn Riekman, Box 1690, Rosetown, SK, S0L 2V0. Phone: office (306) 882-2123 or home (306) 882-2006. (02/04)

ONTARIO - Thunder Bay: Full-time associate wanted to start immediately in a combined general dentistry and anesthesia practice. All new equipment (under five years), with three to four ops, modern office. Skiing, fishing, hunting, camping, hiking etc. all within minutes of town. Please call (807) 683-5222 ask for Doug or Sue.

(03/05)

ONTARIO - Southwest Region:
Periodontist and endodontist required for a multi-specialty practice. Part time initially with possibility of developing into a full-time partnership. Reply to CDA ACCESS Box # 2641. (10/03)

ONTARIO - Sudbury: Seeking an experienced associate for my busy family practice. Expanded office hours will include evenings and Saturdays. For more information please contact Russell Knight c/o EXPEDIENT CONSULTANTS (905) 415-9767.

(02/13)

**OTTAWA, ONTARIO
Associate Wanted**

We are seeking an enthusiastic dentist to join our progressive Ottawa practice as an associate (with option to buy in).

We provide the full range of dental services in an excellent, comfortable, modern, computerized environment of personalized care. Bilingualism preferred. If you are interested, please call (613) 230-7475. (02/04)

RHODE ISLAND, USA

- Rapidly growing High Tech Endodontic Practice is seeking a partner.
 - Incentive and student loan pay back a possibility in compensation package.
 - Two ocean-front offices will appease the water-sport enthusiast.
 - Sponsorship for work Visa available.
- Please fax cover letter and curriculum vitae to (401) 946-3780, if you would like to pursue this opportunity. (03/05)

Equipment Sales, Service

ALBERTA: Wanted: Used hydrocolloid unit and a phase contrast microscope. Please call (403) 346-9122.

(03/04)

SASKATCHEWAN: Attention oral surgeons and orthodontists. I need your Axial-Tome 60. Call immediately (306) 463-4488 or fax (306) 463-4488. (12/05)

PRICE BREAKTHRU

**\$90.00 Per unit*
semi-precious metal incl.**

A five-year quality and satisfaction guarantee.
Canadian Qualified Technicians will manufacture your ceramic crown and bridge prescription to perfection.

**Ceko Dental Laboratory
208, 2705 Centre Street, N.W.
Calgary, Alberta T2E 2V5
Tel: (403) 276-3455**

**Conditions:*

1. Regular price \$125.00 per unit reduced to \$90.00 when payment enclosed with Rx.
 2. Semi-precious metal (6% gold).
 3. We pay shipping from our Lab. to your door.
 4. All Rx. shipped out within six days of receipt.
- We use *Priority overnight service.* (11/02)

**DANSEREAU HEALTH PRODUCTS
CLINIC II**

California Chair

All electric, auto return. Reversible cushions, choice of 30 colors.

Delivery System

3-Handpiece automatic foot control, air lock arm, stainless steel tray, 3-Way syringe, X-ray view box.

Assistants Package

HVE, saliva ejector, 3-way syringe, cuspidor, manual cup filler, quick disconnect, J-box with controls for easy installation.

Light

Chair mounted light, post plate and cup.

Retail \$5,325. With Cash Discount \$3,995.

We accept Visa & MasterCard.

All prices FOB factory Anaheim.

Manufacturer direct sales for 31 years.

**DANSEREAU HEALTH
PRODUCTS**

**559 S. Rose Street
Anaheim, CA 92805**

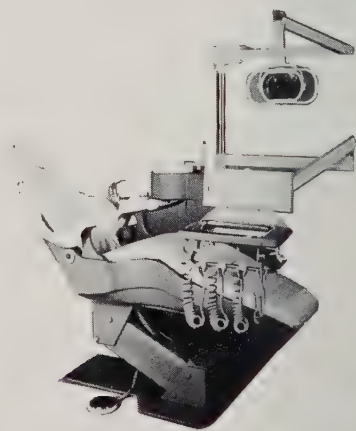
(714) 776-5357 FAX (714) 776-4652

(800) 423-5657 (USA & Canada)

**DANSEREAU HEALTH
PRODUCTS CANADA**

3412 Oxford Street, Port Coquitlam, BC

(604) 941-6799, (800) 561-3177 (Canada)



Meetings & Announcements

THE UNIVERSITY OF BRITISH COLUMBIA PRESENTS:

1995 Dental Travel and Learn Alaska Cruise!

SUBJECT: The 21st Century Dental Practice.
SPEAKER: Dr. William Dickerson, a noted authority on cosmetic dentistry and practice management.
DATE: July 18-25, 1995.
SHIP: Holland America's magnificent new *STATENDAM*.
ITINERARY: Departs Vancouver, travelling the Inside Passage and visiting Ketchikan, Juneau, Glacier Bay, historic Sitka, and returning to Vancouver.
TUITION: Dentist \$295 CDN, others attending courses \$175 CDN.
CONTACT: CRUISE HOLIDAYS toll-free in North America 1-800-665-6313. This branch is the exclusive agent for this cruise!

ADVANCE NOTICE! Western Caribbean Cruise slated for February 4-11, 1996 on Norwegian Cruise Lines' spectacular *DREAMWARD!* Visiting Grand Cayman, Playa del Carmen, Cozamel, Cancun, and Great Stirrup Cay! Contact CRUISE HOLIDAYS to be put on their mailing list for further details on this and all other UBC Travel And Learn Dental Cruises.

BERMUDA MEETING

Our annual Bermuda Dental Association Convention will be held at the Royal Hamilton Amateur Dinghy Club, Paget, on July 6th, 7th & 8th, 1995.

Guest Speaker: Dr. Raymond Bertolotti, DDS

Advanced Adhesion Dentistry

Registration Fee: \$350 U.S., includes cocktails, wine and cheese party on first night, coffee and refreshments during lectures and cocktails at closing reception, immediately following final lecture.

Hotel accommodations should be made as soon as possible with your local travel agent.

Send registration and any further inquiries to:

Dr. Robert E. Gibbons, BS, DDS
"Erin", 2 Southcourt Avenue, Paget PG06, BERMUDA
Phone: (809) 236-4477
Fax: (809) 236-8380

or

Canadian registrants can preregister by contacting

Mrs. Lynne Brandon, CDA.
85 Lonsdale Drive,
London, Ontario N6G 1T4
Phone: (519) 657-3368 or Fax: (519) 472-9120

(03/03)

Selling a practice?

Leasing an office?

Buying Equipment?

*Renting your
vacation property?*

To Place your

CDA ACCESS AD
just call
NEIL MCGILLIVRAY

Toll-free at
(800) 661-5004
In Toronto, just dial
(905) 278-6700

The Canadian Dental Association

***Speaking
to
Dentists,***

***Speaking
for
Dentistry,***

***Working
for you.***

Miscellaneous

CONDOS FOR SALE **Costa Rica, Central America**

Canadian physician is building 16 condo
apartments at **Jaco Beach, Costa Rica,**
100 feet from the Pacific Ocean.

One bedroom units \$69,900 to \$74,900
U.S. funds. Limited mortgage available.
Ecotourism, contact R. Aubin MD for a
complimentary brochure. **Phone**

(613) 526-1952, Fax (613) 526-0990. (01/03)



Pickering College

Day and boarding school from grade 4 to high school graduation

More than 150 years of caring education.

- strong academic programs
- full athletic program
- caring teachers
- accountability to parents
- modern facilities in a suburban setting
- close to the advantages of Metro Toronto

For further information, please contact:

**Admissions Office
Pickering College
16945 Bayview Avenue
Newmarket, Ontario
Canada L3Y 4X2
Phone: (905) 895-1700 Fax: (905) 895-9076**

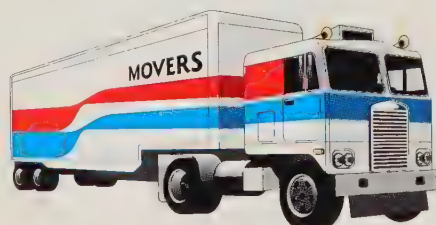
(03,05)

ADVERTISERS' INDEX

Abel Computers	257
Advanced Applications.....	197
Ash Temple	IFC
Bank of Nova Scotia	187
Bisco Dental.....	IBC
Block Drugs.....	177
CDA Board of Governors ...	184
CDA Dental Health Month.....	244
CDA Leasing.....	182
CDA Library.....	258
CDA Membership.....	235
CDAnet.....	260
CDA RSP	190
CDA Surviving and Thriving	231, 232
CDA Taking Care of Business	201, 202
CDSPI	251
Clinical Research Associates.....	229
DCF	210
Hoechst-Roussel.....	178
Ivoclar Vivadent.....	206
Ivoclar Williams	180, 236
Logitech	252
Maximum Computers.....	225
Metasy's Dental	191
Premier Dental.....	172, 176
Quintessence.....	226
SAAB	243
Synca	OBC

So, you're moving ...

Send us your new address
and we'll mail the *Journal*
to your new location.



Please mail this form to:
Membership Records
Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

NAME: _____

NEW ADDRESS (office ☐ home ☐):

CITY: _____

PROVINCE: _____

POSTAL CODE: _____

PHONE No.: _____

CDA ID No.: _____

A New Era in Posterior Composite Restorations



"A HIGHLY RECOMMENDED CLASS II TECHNIQUE"

— JOHN KANCA, III, DMD

Dr. Kanca is a graduate of the University of Connecticut and has a private practice

in Middlebury, CT, with an emphasis on Cosmetic Dentistry. He is a founding member and past president of the American Academy of Cosmetic Dentistry. Dr. Kanca is recognized worldwide as one of the leading authorities on adhesive dentistry. Dr. Kanca is attributed with discovering the ability to bond to wet tooth structure as well as being the first to generate a gap-free restoration in-vivo. He is the recipient of the prestigious Hinman Medallion and more recently the Gordon Christensen Award, presented at the 1995 Chicago Mid-Winter Meeting.

Two of the most common complaints as far as posterior composites are concerned are post-operative sensitivity and the failure to obtain good contacts. Post-operative sensitivity is due to gap formation, a frequent consequence of composite polymerization shrinkage exceeding the bond strength of the dental adhesive. If polymerization shrinkage force could be minimized, the chances for post-op comfort increases. One of the ways this can be done is with the utilization of a self-cure composite. The use of self-curing materials has long been the recommendation of Takao Fusayama of Japan, and has been continued by Ray Bertolotti. The following technique is an evolution of the prior techniques and offers advantages previously unavailable.

The tooth to be restored is properly isolated. (Fig 1) It is recommended that the tooth be pumiced while waiting for the anaesthesia. The preparation consists simply of removing the undesired material in the tooth. That is, only the old restoration

is removed and any unsupported enamel is allowed to remain. (Fig 2) The second and third significant items of need are the proper matrix and wedge. The recommended matrix is the Sectional Matrix Band and an Anatomic Wooden Wedge. The Anatomic Wedges are contoured concave in both a gingivo-incisal and bucco-lingual dimension. The Sectional Matrix is placed on either interproximal as indicated. (Fig 3) A wedge of proper size is selected and is inserted into the interproximal(s). With this technique severe wedging is not required - the wedges need only be tight. A high-bond strength dental adhesive, such as All Bond 2 from Bisco, is applied to the enamel and dentin. It is light-polymerized for 20 seconds. (Fig 4) Equal amounts of Base and Catalyst of Bis-Fil II are placed on a mixing pad. Bis-Fil II is a dense, viscous autocuring posterior composite. (Fig 5) The material is thoroughly mixed and then is delivered into the cavity preparation via a Centrix Syringe and High Viscosity Tip. Bis-Fil II has an

extremely interesting characteristic, it undergoes three distinct phases during polymerization. At first it is easily plastic in handling, but then it transforms into a rubbery type consistency. During this second phase the Bis-Fil II is condensable. (Fig 6) The material is condensed into the contact areas and the pulpal floor. A Clinician's Choice #1 is the recommended condensing instrument. This phase lasts 15-20 seconds. At the end of the second phase the material will become noticeably harder. At this point the condensing must stop, lest the composite break. The self-cure material is filled into the cavity such that it fills about 2/3 of the cavity preparation. (Fig 7)

A thin layer of unfilled bonding resin is applied to the hardened composite and a wear resistant light-cure composite (such as AeliteFil) is incrementally placed into the cavity prep until slightly overfilled. (Fig 8) Each increment should individually be light-polymerized. The matrix and wedges are then removed and the restoration is finished. It is recommended that a flexible disc be used to finish the excess that will be present in all four line angles. After the occlusion is properly adjusted (Fig 9), the restoration is etched briefly (3 sec), rinsed and dried. The composite surface sealant Fortify is then applied to the restoration. The Fortify is air-thinned, the embrasures are cleared with floss and then the restoration is light-polymerized for 30 seconds each from the facial, lingual and occlusal surfaces. The completed case is shown. (Fig 10) This technique could possibly make post-operative sensitivity a thing of the past. (Fig 11) shows the restoration at 1 year recall.



Bis-Fil II is manufactured by Bisco Dental Products, Itasca, IL. IN CANADA, ... for more information regarding this technique and associated products please contact BISCO DENTAL PRODUCTS CANADA (Western & Quebec Dentists) at 1-800-667-8811 or CLINICAL RESEARCH DENTAL (Ontario & Maritime Dentists) at 1-800-265-3444.

Now you can moist -bond without getting soaked.

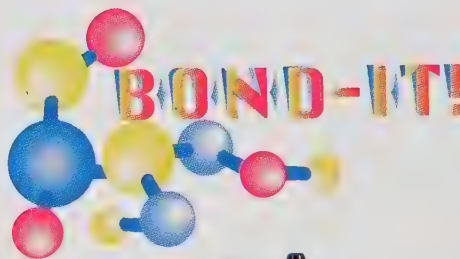


Bond-it! is the perfect bonding agent for practicing modern adhesive dentistry. Bond-it! excels in all areas offering an exceptionally high bond strength between dentin, enamel and all popular restorative materials.

Bond-it! is a licensed version of the popular Bowen A+B bonding system and uses the latest PMGDM resin technology. The technique is familiar, with easier dispensing, less waste and even better desensitization.

Results of independent testing confirm Bond-it!'s extremely high bond strength to dentin (29.4Mpa.)*.

Use Bond-it! in conjunction with new Cement-it! for bonding crowns, bridges, posts, inlays, and onlays.



The era of
moist bonding
without getting soaked

The complete Bond-it! kit sells for only 129.90\$.

Until April 28th, 1995, with the purchase of two Bond-it! kits, we will send you an additional A+B primer set (an \$85 value) absolutely free.

To order, or for more information, call us at 1-800-667-9622.

SynCA
providing solutions with
JENERIC-PENTRON

*Dr. John Powers, PhD., data on file

B

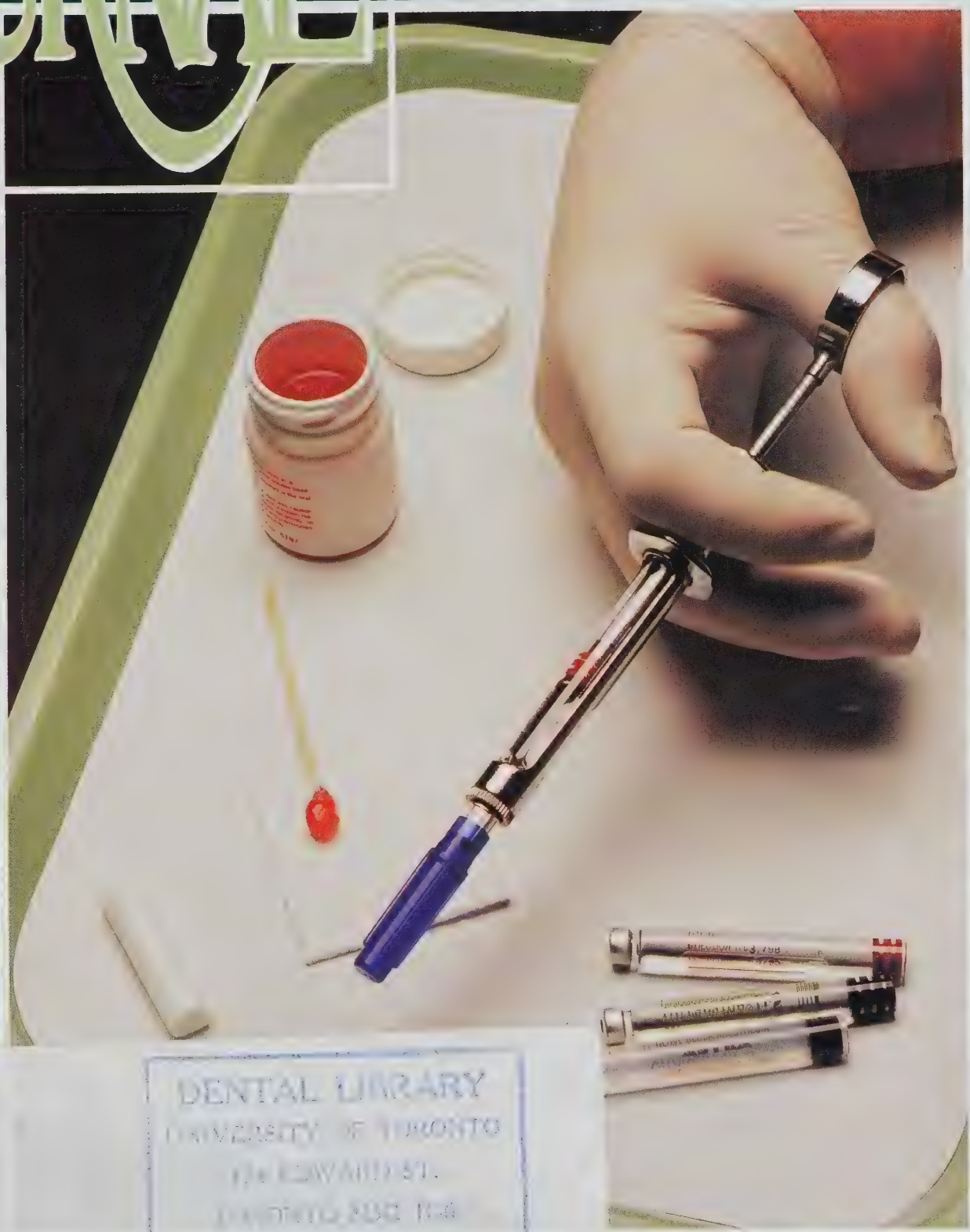
JOURNAL

of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

Vol. 61 No. 4
APRIL
AVRIL
1995

If undeliverable
to Addressee
RETURN TO SENDER
Return Postage
Guaranteed

Si non livrable
au destinataire
RETOURNER A
L'EXPEDITEUR
Port Payé



DENTAL LIBRARY
UNIVERSITY OF TORONTO
114 EDWARD ST.
TORONTO, ONT. M5G 1G5
TORONTO, CANADA

Anesthesiology
Anesthésiologie

Turn a GANG of *KILLERS* loose in YOUR OFFICE!

Microbex has a whole range of microbial control products and services to cover your every need.

Our full-spectrum Ethanol solution disinfects instruments or surfaces in one minute – our tests prove it! This increases productivity while accelerating patient turn-around.

Our innovations in product and technique include unique dispensing systems and sterility assurance programs.

A new fully equipped Research, Quality Control and Microbiological Laboratory offers a full range of services including

computerized spore testing for autoclaves, chemiclaves and dry heat sterilizers.

These and many other reasons make Microbex the Canadian leader in asepsis products today.

For more information on the complete line of Microbex products, call 416-477-5442 or your Ash Temple branch.



Leaders in Microbial Control
67 Lesmill Road
Don Mills, Ontario M3B 2T8

An Ash Temple Company—
Ash Temple Limited, Servident,
A-Tech, Microbex Aseptics,
Acrylium



Microzyme

Dual Purpose Enzymatic Instrument Pre-Soak and Ultrasonic Cleaner

Solution enzymatique de pré-trempeage/instrument et nettoyeur ultrasonique

This package contains sufficient concentrate to prepare 20 L of solution.
Dilution: 1:10
Ratio: 100 mg
100 mg per 1000 ml water.
Contains: Enzyme 4%,
Sulfonamide 2%.



Sonibex

Ultrasonic Disinfecting Detergent Concentrate
Détergent ultrasonique désinfectant concentré

This package contains sufficient concentrate to prepare 40 L of solution.
Dilution: 1:10
Ratio: 20 ml (2 pumps)
to 500 ml water.
Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

This package contains sufficient concentrate to prepare 40 L of solution.

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Surfex-E

Ethanol Disinfectant for Hard Surfaces

Désinfectant à l'éthanol pour surfaces rigides

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Virobex-P

Antimicrobial Liquid Handwash

Solution antimicrobienne pour les mains

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

ex-P

Antimicrobial Liquid Handwash

Solution antimicrobienne pour les mains

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Surfex-E

Ethanol Disinfectant for Hard Surfaces
Désinfectant à l'éthanol pour surfaces rigides

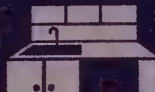
Ready to use. Do not dilute.

Active Ingredients:

70% Ethyl Alcohol,

0.14% Chlorhexidine

Glucuronate, 0.1%



Prêt à utiliser. Ne pas diluer.

Ingédients actifs:

Alcool éthylique à

70%, Glucuronate

de chlorhexidine à

Instrubex-E

Ethanol Disinfectant for Instruments

Désinfectant à l'éthanol pour instruments

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Ratio: 1:10

Caution:
Sulfonamide 2%,
Phenyl 2%,
Chlor 2%.

Markham, Ontario

Instrubex-G

Activator Concentrate

CDA MISSION STATEMENT



“The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.”

SPECIALTY EDITORS

Endodontics

Dr. W. H. (Bill) Christie

Oral and Maxillofacial Surgery

Dr. David S. Precious

Oral Pathology

Dr. James H. P. Main

Orthodontics

Dr. Kenneth E. Glover

Pediatric Dentistry

Dr. Victor Legault

Periodontics

Dr. James E. (Jim) Stakiw

Prosthodontics

Dr. Michael MacEntee

Public Health

Dr. Donald Lewis

Radiology

Dr. Robert E. Wood

CDA EXECUTIVE COUNCIL

President

Dr. Bryun Sigfstead
Edmonton, Alberta

President-Elect

Dr. James Brookfield
Kirkland Lake, Ontario

Vice-President

Dr. Barry Dolman
Montreal, Quebec

Dr. John Diggins
Vancouver, B.C.

Dr. Toby Gushue
St. John's, Nfld.

Dr. Richard D. Sandilands
Edmonton, Alberta

Dr. David Somer
Hamilton, Ontario

Dr. Tom Breneman
Brandon, Manitoba

Dr. Louis Dubé
Sherbrooke, Quebec

CONSULTING EDITORS

Anesthesiology

Dr. Earle Young

Dental Materials

Dr. Peter T. Williams

Medicine

Dr. George K.B. Sandor

Pharmacology

Ms. Helen Grad

Forensic Dentistry

Dr. Robert Dorion

Infection Control

Dr. Joel Epstein

Practice Management

Dr. Bob Brandon

Cosmetic Dentistry

Dr. Ken Neuman

Nutrition

Mrs. Nina Burgess

Canadian Dental Hygienists Association

Ms. Carol Matheson Worobey

Canadian Dental Assistants Association

Ms. Charlotte Peer-Miller

CDA STAFF

EXECUTIVE

DIRECTOR'S OFFICE

Executive Director

A. Jardine Neilson

CORPORATE AFFAIRS

Manager, Corporate Affairs

Sandra Davis

Coordinator, Board and Executive

Suzanne Burton

PROFESSIONAL SERVICES

Director, Education and Accreditation/Professional Services

Brian Henderson

Associate Director, Education and Accreditation

Susan Matheson

Coordinator, Education and Accreditation

Gay MacQuarrie

Coordinator, DAT

Danuta Askew

Coordinator, Purchaser Infor- mation Program, CDAnet

Patricia Drake

COMMUNICATIONS

Director of Communications

Linda Teteruck

Librarian

Martha Vaughan

Manager, Membership Services

Carol Anne Deneka

Manager, Information Services
Lisa Burke

ADMINISTRATION

Director of Administration

Joel R. Neal

Manager, Human Resources

Tefiro Kyeyune

Secretary, Membership

Lydia Allison

JOURNAL

Published monthly by the Canadian Dental Association at 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6. Copyright 1982 by the Canadian Dental Association. Authorized as Second Class Mail, Registration Number 5384. Postage paid at Ottawa, Ont.

Subscriptions: All subscriptions payable in advance in Canadian funds. In Canada — \$48 (+ GST); United States — \$53; all other — \$58.

Subscriptions are for 12 issues, not necessarily conforming with the calendar year.

Notice of change of address should be received before the 10th of the month, to become effective the following month.

Member:

American Dental Editors' Association
Canadian Circulations Audit Board

Call CDA for information and assistance toll-free at:

1-800-267-6354

CDA Fax No.: 1-613-523-7736

All matters pertaining to advertising should be directed to:

Keith Health Care Communications
1382 Hurontario Street
Mississauga, Ont.
L5G 3H4

Attn : Ms. Janet Duffield,
Sales Representative, or,
Mr. Neil McGillivray, CDA Access Representative

Tel. : (905) 278-6700

Fax : (905) 278-4850

JOURNAL

April/
Avril
1995
Vol. 61
No. 4



THE MOST ACCURATE IMPRESSIONS... With Just A Touch!

ESPE PENTAMIX® will revolutionize your impression mixing.

- ◆ Saves time, providing you with a void-free mix every time.
- ◆ Easy to use. You even have extended working time.
- ◆ Ideal for the asepsis oriented practice, eliminates potential cross contamination.



*The tray and syringe are loaded in seconds.
There is virtually no waste and no clean up.*

New!
ESPE PENTAMIX®
AUTOMATIC MIXER FOR IMPREGUM®

Send for a free video.

® Pentamix is a registered trademark of ESPE Dental-Medizin GmbH & Co. KG, Germany
® Impregum is a registered trademark of Premier Dental Products Co.

ESPE Canada • 480 Hood Road, Unit 3 • Markham, Ontario L3R 9Z3 • 800-465-8455

JOURNAL

CANADIAN DENTAL ASSOCIATION/
L'ASSOCIATION DENTAIRE CANADIENNE

APRIL/AVRIL 1995
VOL. 61, NO. 4

Executive Director
A. Jardine Neilson

Editor
Dr. P. Ralph Crawford

Managing Editor
Terence Davis

Assistant Editor, Writer
Antonia Papadakou

*Coordinator, production
& desktop services*
Michelle Walters

Circulation Secretary
Rachel Galipeau

Scientific Editor (English)
Dr. Robert S. Turnbull

Scientific Editor (French)
Dr. Pierre C. Desautels

All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association. The editor reserves the right to edit all copy submitted to the *Journal*. Publication of an advertisement does not necessarily imply that the Canadian Dental Association agrees with or supports the claims therein.

The *Journal of the Canadian Dental Association* is published in both official languages, except scientific articles, which are published in the language in which they are received. Readers may request the *Journal* in the language of their choice.

ISSN 0709 8936
PRINTED IN CANADA

ANESTHESIA



- 297 Local Anesthetic Use By Dentists In Ontario**
D.A. Haas, DDS, PhD, FRCD(C)
D. Lennon, BDS, MBA

- 305 Maxillary Nerve Block: A Case Report and Review Of the Intraoral Technique**
I.A. Nish, B.Sc., M.Sc., DDS
B.R. Pynn, B.Sc., M.Sc., DDS
H.I. Holmes, DDS, Dip. OMFS, et al.

- 319 A 21 Year Retrospective Study of Reports of Paresthesia Following Local Anesthetic Administration**
Daniel A. Haas, DDS, PhD, FRCD(C)
D. Lennon, BDS, MBA

FEATURE



- 331 The Canadian Dental Association Guidelines On Chewing Gum Recognition**
Hardy Limeback, B.Sc., PhD, DDS

CLINICAL

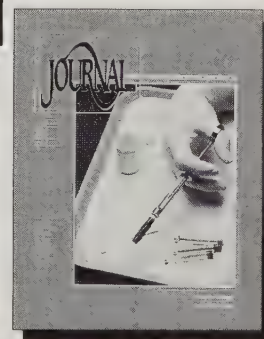


- 340 La candidiase buccale : diagnostic et traitement pharmacologique**
Ngoc Thanh Nguyen, B. Pharm., DMD
Benoît Lalonde, DMD, MSD

DEPARTMENTS



- 274 Meetings and Courses
- 277 Letters to the Editor
- 279 Editorial
- 281 President's Column
- 282 Book Reviews
- 284 Let's Talk
- 289 Practice Management and Success
- 292 News Update
- 311 CDA Convention
- 353 CDA Access Ads
- 358 Advertisers' Index



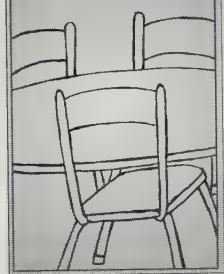
Cover: Anesthesiology (Photograph Courtesy of Dr. Walter Pelech).

JOURNAL

April/
Avril
1995
Vol. 61
No. 4

273

MEETINGS & COURSES



INTERNATIONAL



May 20-24

European Begg Society of Orthodontics, 17th Congress to be held in Chester, U.K. For information contact Geoff Budd, Brookside, 35 Warwick Park, Tunbridge Wells, Kent. TN2 5TA U.K.

June 1-3

BDA Annual Conference "Success in Practice" to be held in Birmingham, England. For more information contact: Linda Wallace, British Dental Association, 64 Wimpole St., London W1M 8AL, England. Tel: (71) 935 0875 or Fax: (71) 487 5232.

June 12-15

1995 Roentgen Centenary Congress and Historical Exhibition to be held in Birmingham, U.K. For more information contact: Miss V. Whitehead, Conference Office, British Institute of Radiology, 36 Portland Place, London W1N 4AT, U.K.

June 12-23

An intensive course in Oral Pathology (including most aspects of Oral Medicine) will be given in Copenhagen on the premises of the Danish Dental Association. The course consists of 40 lectures and 30 hours at the microscope and will be conducted in English. Registration before April 1, 1995.

For further information: Secretary Anne Grethe Ingversen, Department of Oral Pathology, School of Dentistry, University of Copenhagen, 20 Nørre Allé, KD-2200 Copenhagen N, Denmark. Tel.: +45 35326721.

June 28 - July 1

Third Endodontic World Congress sponsored by the International Federation of Endodontic Associations and organized by the Società Italiana di Endodonzia will be held in Rome, Italy. For more information contact IFAE - SIE Viale Ippocrate, 97 - 00161, Roma, Italia. Tel.: 39 6 4469955 or Fax: 39 6 4457464.

June 28 - July 1

International Association for Dental Research — 73rd General Session and Exhibition to be held in Singapore. For more information contact: E. Gwynn Breckenridge, Director of Scientific Meetings, 1111 Fourteenth Street N.W., Suite 1000, Washington, D.C. 20005, U.S.A. Tel: (202) 898-1050 or Fax: (202) 789-1033.

June 29 - July 3

XII International Congress on Oral & Maxillofacial Surgery to be held in Budapest, Hungary. For more information contact: Prof. G. Szabo, Dept. of Oral & Maxillofacial Surgery, Semmelweis University of Medicine, H-Budapest VII, Maria U. 52, Hungary.

August 23-26

XV World Congress — International Congress of Oral Implantologists to be held in San Francisco, Calif. For more information contact: R. Craig Johnson, 248 Lorraine Ave., Upper Montclair, N.J. 07043, U.S.A. Tel.: (201) 783-6300 or Fax: (201) 783-1175.

October 23-27

83rd FDI Annual World Dental Congress to be held in Hong Kong. For information contact: Laura Stephenson (613) 523-1770 ext. 246.

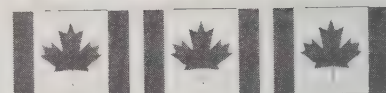
October 31 - November 4

Centenary Congress — 28th International Dental Meeting to be held in Buenos Aires, Argentina and sponsored by the Asociación Odontológica Argentina. For more information contact: Dr. Guillermo Pisarenko, president, Junin 959, (1113) Buenos Aires, Argentina. Tel: (1) 961-6141 or Fax: (1) 961-1110.

November 15-17

Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00 or Fax: (8) 662 58 42.

CANADA



May 4-6

Orthodontics for the General Practitioner — This course is presented by the Department of Orthodontics under the direction of Dr. G. Altuna of the faculty of dentistry, University of Toronto. For information contact: Continuing Dental Education, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ontario M5G 1G6. Tel: (416) 979-4902 ext. 4503 or 4590 or Fax: (416) 979-4941.

May 4, 5 and 12

Dental Nutrition Course to be held in Vancouver, B.C., London, Ont., Victoria, B.C. and Toronto, Ont. This six-hour continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ont.) 1-800-937-6878.

May 5

Current Concepts in Emergency Pain and Anxiety Management presented by Dr. Michael Saso. Location: Windsor, Ont. For fur-

ther information contact: The Ontario Dental Association, Professional Development, 4 New St., Toronto, Ont. M5R 1P6. Phone-in Registrations: 1-800-387-1393 ext. 304 or Fax: (416) 922-9005.

May 12

5T5 40th Gala Reunion Dinner to be held at the Crown Plaza Hotel Convention Center. Reception at 6:00 p.m. and Dinner at 7:00 p.m. For further information and reservations contact Dr. Gordon Marshall 316-200 St. Clair Ave. West, Toronto, Ont. M4V 1R1. Tel.: (416) 923-1733.

May 13

Maxillary Complete Dentures vs Natural Dentition/Anatome — "Anatomy of a Smile." With Dr. Robert Brygider. This presentation will explore some of the resultant problems and pathologies associated with the clinical conditions and will seek to offer modifications to the treatment process. For more information contact: Continuing Dental Education, Faculty of Dentistry, Dalhousie University. Halifax, Nova Scotia B3H 3J5. Tel: (902) 494-1674 or Fax: (902) 494-2527.

June 3

A Symposium on Implant Supported Overdentures — This symposium will be directed by Dr. George Zarb and the Implant Prosthetic Unit staff of the University of Toronto and feature experts in the field from other teaching institutions. For information contact: Continuing Dental Education, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ontario M5G 1G6. Tel: (416) 979-4902 ext. 4503 or 4590, or Fax: (416) 979-4941.

June 8

Dental Nutrition Course to be held in Burnaby, B.C. This six-hour continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ont.) 1-800-937-6878.

June 9

Participation Course — Advanced Endodontic Technique. This hands-on course is presented

by Dr. Shimon Friedman and Dr. Wayne Pulver, with the participation of endodontic department staff, postgraduate residents and invited guests. For more information contact: Continuing Dental Education Office, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ont. M5G 1G6 Tel: (416) 979-4902, ext. 4503 or 4590, or Fax: (416) 979-4941.

June 15

Emergency Procedures in the Dental Practice — This course will be presented by the department of anesthesia, faculty of dentistry, under the direction of Dr. E. Young. For information contact: Continuing Dental Education, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ontario M5G 1G6. Tel: (416) 979-4902, ext. 4503 or 4590, or Fax: (416) 979-4941.

September 13-17

31st Annual Meeting of the Canadian Academy of Endodontics to be held at the Westin Hotel, Ottawa, Ont. For information contact: Dr. William J. Kost (519) 672-4611 or Dr. George Citrone (613) 238-2463.

September 14-16

Canadian Association of Orthodontists — Annual Scientific Session to be held at the Château Laurier Hotel in Ottawa, Ont. For more information contact the Canadian Association of Orthodontists at (416) 491-3186 or fax (416) 491-1670.

September 14-16

Canadian Academy of Restorative Dentistry and Prosthodontics is holding its scientific session in Toronto, Ont. at the Four Seasons Hotel. For more information contact Dr. Jeff Martin, '95 Convention Registrar, at 90 Eglinton Ave. West, Suite III, Toronto, Ont. M4R 2E4, or call (416) 488-4441.

September 15-17

Canadian Academy of Pediatric Dentistry/Académie canadienne de dentisterie pédiatrique, Annual meeting/Congrès Annuel to be held at the Sheraton Centre, Montreal, PQ. For more informa-

tion please contact: Dr. L.-R. Charette, 3550 Côte-des-Neiges, Suite G-80 Montreal, PQ H3H 1V4. Tel.: (514) 931-1155.

October 20-21

Southern Ontario Surgical Orthodontic Study Group Meeting to be held in Windsor, Ont. For details contact Dr. Jeff Berger at (519) 258-2632 or Fax: (519) 258-2637.

October 20-22

21st Century Ceramics Symposium to be held in Vancouver, B.C. For more information contact Ms. Mary Thomas, Vancouver Seminar for Dentistry, #280-7580 River Road, Richmond, B.C. V6X 1X6. Tel.: (604) 278-5426 or Fax: (604) 278-6864.

U.S.A.



May 3-8

American Academy of Cosmetic Dentistry, 11th Annual Scientific Session to be held in Orlando, Fla. at the Hyatt Regency Grand Cypress Resort. For more information contact: AACD Executive Office at 1-800-543-9220, or write to: AACD, 270 Corporate Dr., Madison, Wis. 53714, U.S.A.

June 8-11

5th International Symposium on Periodontics and Restorative Dentistry to be held in Boston, Mass. For more information contact: Quintessence Publishing Co. Inc., 551 North Kimberly Dr., Carol Stream, Ill. 60188. Fax: (708) 682-3288.

September 15-16

The American Dental Association, Michigan Dental Association and West Michigan Dental Society are proud to celebrate during 1995 the **50th Anniversary of Community Water Fluoridation in the United States.** An international symposium on community water fluoridation will be held at the Van Audel Center in Grand



April/
Avril
1995
Vol. 61
No. 4



Rapids, Michigan. For more information contact: Dr. Arnold Morawa or Ms. Debbie Montague, University of Michigan School of Dentistry, 1011 N. University Ave., Ann Arbor, Michigan 48109-1078. Tel: (313) 764-6856, or fax: (313) 936-3065.

October 4-6

58th Annual Meeting of The American Association of Public Health Dentistry — Call for Abstracts. The AAPHD is inviting papers on a broad range of dental public health topics for presentation at its annual meeting. The theme of this year's meeting is "Oral Health: The Primary Care and Prevention Model." Deadline for submission is May 1, 1995. For further information contact AAPHD National office, 10619 Jousting Lane, Richmond, Va. 23235-2828. Tel: (804) 272-8344 or Fax: (804) 272-0802.

October 7-11

136th Annual Session of the American Dental Association to be held in Las Vegas, Nev. For more information contact: American Dental Association, 211 E. Chicago Ave., Chicago, Ill., 60611, U.S.A. Tel.: (312) 440-2658 or Fax: (312) 440-2707.

November 27-28

American Board of Oral and Maxillofacial Radiology 1995 — Certifying Examination. Applications must be submitted by May 15, 1995. For further information please contact Dr. Curtis Lundeen, School of Dentistry — Oral Radiology, Oregon Health Sciences University, 611 S.W. Campus Dr., Portland, Ore. 97201-3097. Tel: (503) 494-8930.

Notices of meetings and continuing education courses are published without charge for appropriate **not-for-profit** dental organizations, teaching facilities or recognized study clubs. Information must be received two months prior to expected publication date, and will be published at the discretion of the editor. Send all requests C/O Ms. Rachel Galipeau, *Journal* circulation secretary, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6.

DENTAL MEETINGS



May 11-13

Newfoundland Dental Association Meeting to be held in St. John's, Nfld. (709) 579-2362.

May 11-13

ODA Annual Spring Meeting to be held in Toronto, Ont. (416) 922-3900 ext. 346.

May 25-28

Alberta Dental Association Annual Meeting to be held in Jasper, Alta. Contact: Dr. Dave Scott (403) 492-2014.

May 26-27

New Brunswick Dental Society Annual Meeting to be held in Moncton, N.B. (506) 452-8575.

May 27-31

Les Journées dentaires du Québec to be held in Montréal, Qué. Contact: Nicole Pagé or Ginette Boutin (514) 875-8511 Fax: (514) 875-1561.

May 30

24^e Congrès annuel de l'Ordre des Dentistes du Québec to be held in Montréal, Qué. (514) 875-8511.

June 1-3

Dental Association of P.E.I. Annual Meeting to be held at the Mill River Resort in P.E.I. Contact: Dr. G. Hood, (902) 894-9232.

June 9-10

Nova Scotia Dental Association Annual Meeting to be held in Digby, N.S. Contact: Mr. Steve Jennex (902) 420-0088.

August 25-26

Annual Meeting of the CDA Board of Governors to be held in Ottawa, Ont. Contact: Suzanne Burton (613) 523-1770, ext. 201, or 1-800-267-6354.

Multiple Sclerosis Carnation Day

Make a donation...
...wear a carnation!

Your support will bring hope to the thousands of young Canadians struck down each year by multiple sclerosis. So far there's no cause or cure for this mysterious disease, which can lead to loss of sensation, co-ordination or even paralysis.

With your help we can intensify our research efforts to find the answer.

We're counting on your support. Show you care.

Make a donation.
Wear a carnation.



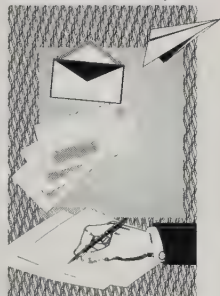
Multiple Sclerosis Society
of Canada

For more information, or to donate your time or money, contact your local chapter of the Multiple Sclerosis Society of Canada.



April/
Avril
1995
Vol. 61
No. 4

LETTERS



AIDS and Discrimination

I am writing to you regarding the article, entitled "AIDS and Discrimination: The Windsor Case," published in the January issue of the *Journal* (Crawford, P.R. 61(1):25-27, 1995).

The article describes the experiences of a Windsor dentist as he successfully defended allegations of discrimination brought against him by his HIV-positive patient. It goes on to

report that through the dentist's three-year ordeal with the justice system, he also defended himself — successfully — before the Royal College of Dental Surgeons (RCDS) of Ontario's Discipline Committee. This last statement is inaccurate and needs to be corrected.

As you may be aware, the RCDS publishes the results of all its discipline decisions — whether the member is found guilty or not. A review of these past publications will support the fact that, to date, the discipline committee has never dealt with allegations of professional misconduct based on discrimination of an HIV-positive patient. Consequently, you can rightly conclude that the Windsor dentist was not required to defend himself before the RCDS's discipline committee, as was stated in this article.

With regard to the general theme of the article, I believe it is important to emphasize to dentists that postponing a patient's treatment until the end of the day, simply because the patient is HIV-positive, is unnecessary practice and discriminatory. If a dentist adheres to the principles of universal

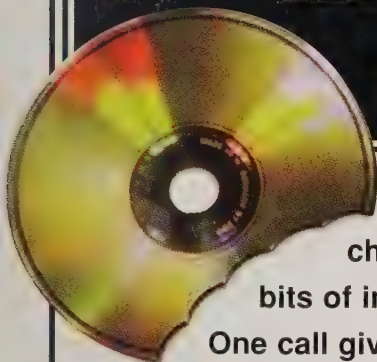
precautions (i.e. treating all patients as if they are HIV-positive), then postponing the treatment of such patients for no medically justifiable reason makes no logical sense.

In the particular case cited in your article, it appears that the dentist postponed the patient's initial treatment because he believed it was necessary to consult with the patient's physician to ensure that the treatment he was about to render would not negatively impact on the patient's health. This, as any prudent dentist would agree, is appropriate practice and is in the best interest of the patient. Perhaps if the dentist had communicated his concern for the patient's welfare more clearly to the patient, this unfortunate incident with all its ramifications would not have occurred.

*Minna H. Stein, DDS, M.Ed.
Deputy Registrar
Royal College of Dental Surgeons of Ontario*

See page 350 for response. . .

1,885,488,623,045 seconds
2,381,126,109,426 bits
1 byte



The CDA Library can
chew through millions of
bits of information in one bite.

One call gives CDA members access
to over 3,000 medical and dental journals
using MEDLINE on our CD-ROM system.

Let experienced CDA Library staff and
the latest technology help you find the
information you need in seconds. Current
articles and comprehensive bibliographies
can be on your doorstep or fax machine
within hours.

1 800 267 6354
ext: 223

Fax: (613) 523 6574



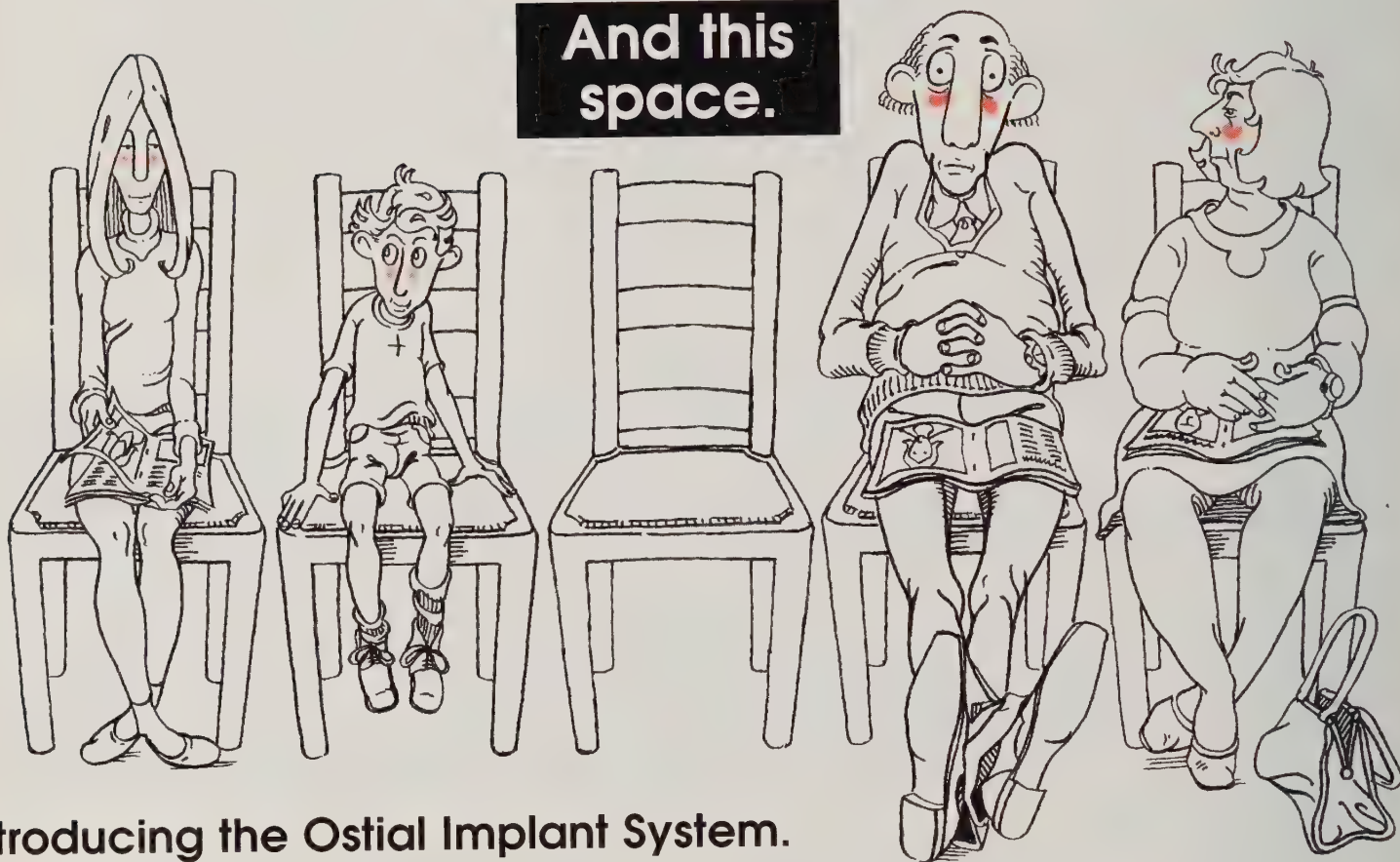
**CANADIAN
DENTAL
ASSOCIATION**



At last, an affordable, uncomplicated implant system to help you fill this space.



And this
space.



Introducing the Ostial Implant System.

Hoechst-Roussel Canada is pleased to introduce Ostial, an affordable, innovative new implant system.

The Ostial Implant has a conical shape for optimum load distribution and a coarse thread design for ease of placement.

Ostial was developed here in Canada and its design is patented*. Training courses will be offered in selected centres and will qualify for Continuing Education credit points**.

For more information, call Michiel Verburg, Product Manager, at 1-800-363-1871 ext.3712 or contact your Hoechst-Roussel representative.

Ostial *Simple.
Affordable.
Innovative.*

Hoechst-Roussel Canada Inc.

*Canadian patent #1248371 issued.

**For an up-to-date listing, contact HRCI.

The successful outcome of any implant procedure is directly related to proper surgical and prosthetic technique.

EDITORIAL

THE MISTAKES I'VE MADE



Dr. P. Ralph Crawford,
Editor

A few months ago, one of our staff members was devastated about a mistake she had made in her work. I still recall how badly she felt, her sense of guilt, and her profuse apologies.

I spent much of that morning, at one and the same time, trying to rectify the error and comfort the employee involved, all the while thinking to myself: "There must be an object lesson here somewhere. The hurt is profound, yet the error isn't all that serious."

By afternoon, I'd filed the event away in the recesses of my mind and turned to other, more pressing concerns. Months later, however, I found myself in a similar situation. My predicament involved a major misunderstanding, brought on by a colossal error in communication. The mistake I made was taking things for granted.

It happened during a very busy week at CDA, when I was negotiating a new *Journal* advertising proposal with a prospective client. All through the meeting, I was talking in thousands while my opponent, a good friend with a keen mind, was thinking in hundreds — dollars, that is. In other words, we were actually negotiating a business arrangement with a multiplier of 10 between what each side assumed

was the bottom line, and neither of us realized it until the 11th hour, when our pens were poised to close the deal.

In the words of Fiorella La Guardia, the former mayor of New York, "When I make a mistake, it's a beaut!"

Afterwards, mulling the error over in my mind, I thought back to the day when I'd counselled my young co-worker about her mistake. The funny thing was, I couldn't remember what she'd been so upset about. The mistake she'd made months before must have been "terrible," for all the anguish it caused, but I actually had to ask her what she'd done wrong. So much for its particular seriousness.

Mistakes are like that sometimes. What seems devastating and stupid at the moment eventually rectifies itself. I only hope that the recent mistake committed by two negotiating friends, which cost both of us countless hours of creativity and thought, will dissipate gracefully and be forgotten with time. Or at least that my friend and I will be able to laugh about it one day.

Over the years, my "best" mistakes have typically involved cars. Some still bring a smile. Like the time I was cleaning the second story eaves on my house and dropped the garden hose. It coiled through the air like a snake, drenching all and sundry with cold water, until the brass nozzle finally flew through the windshield of my new car with a resounding crash.

Another incident still causes a chill to run down my spine, even though it occurred many years ago. My mind wandered when I was driving in traffic and I rear-ended the car in front of me. Only good luck and a seat belt saved my beautiful daughter from being hurled through the windshield. I was fortunate. This mistake annihilated my car, but it could have tragically maimed someone or, worse still, taken a life.

Then there are the dental mistakes. After 25 years, I still recall with horror the day when a sand paper disc on a slow-speed handpiece got caught in the rubber dam. It went out of control and sliced my patient's lip like a scalpel. Or the time I had the forceps

on the wrong bicuspid, and only the sharp eye of an observant dental assistant saved me from a dentist's worst nightmare.

We dentists don't — and shouldn't — forget our mistakes. Only recently, I was reading the memoirs of a dentist reflecting on more than 60 years of practise. One event from early in his early practice days seemed to stick in his mind more than any other. Because of a mix-up in communications and appointments, he performed a full-mouth extraction on the wrong patient. More than half a century later, the event still haunted him.

Fortunately for the dentist who extracted the wrong teeth, and for myself who cut a patient's lip, our mistakes occurred in a more forgiving time. If they had happened in the litigious world of today, chances are we would both be paying much more heavily for our sins than just suffering from an occasional bout of recurring conscience. But how do you prevent or avoid the foibles of being human? Is there any comfort in the words of Francis Wayland, the 19th century American cleric and educator, who said: "The only people who don't make mistakes are dead people. I once saw a man who has not made a mistake for 4,000 years. He was a mummy in the Egyptian department of the British Museum."

For us mere mortals, making mistakes is inevitable. We are not perfect people. Alfred de Musset, the 19th century French author, said it well: "Perfection does not exist; to understand it is the triumph of human intelligence; to expect to possess it is the most dangerous kind of madness."

But in our daily lives — at home and in the office — we can strive to do two things. First, make every attempt to avoid mistakes through care, diligence and concern. Second, learn from our mistakes. Two thousand years ago, Cicero saw into the depths of the human spirit, and said: "Any man can make a mistake, but none but a fool will continue in it."

*P. Ralph Crawford, BA, DMD
Editor of the Journal of the
Canadian Dental Association*

JOURNAL

April/
Avril
1995
Vol. 61
No. 4

SYSTEMS FOR SUCCESS

"Tetric allows me to reproduce beautifully
the esthetics of adjacent teeth."

PAUL BELVEDERE, D.D.S.

REAL

"I use Tetric because of its
unique patented fluoride release,
a property that distinguishes it from
a vast field of hybrid composites."

WILLIAM G. DICKERSON, D.D.S.

UNIQUE

easy

"I find myself using Tetric more
and more - Its easy handling makes
it extremely user-friendly."

LARRY ROSENTHAL, D.D.S.

creative

"With Tetric's excellent opacity, translucency
and shade variety, I can duplicate the anatomy
and luminescence of natural teeth."

DAVID HORN BROOK, D.D.S.

TETRIC™

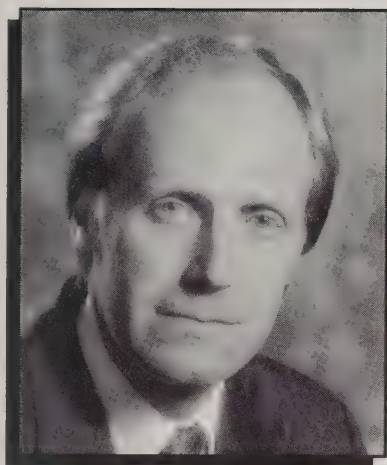
UNIVERSAL MICROHYBRID

IVOCCLAR VIVADENT
IVOCCLAR NORTH AMERICA, INC.

For more information on this or any other products in our system, or to place an order, call us toll
free at 1-800-5-DENTAL in the U.S., 1-800-263-8182 in Canada.

PRESIDENT'S COLUMN

DENTAL TAX WIN IS GOOD NEWS FOR DENTISTRY



Dr. Bryun Sigfstead,
President

Like many Canadian dentists, I sat through Paul Martin's 1995 budget speech on the edge of my chair, waiting for the finance minister to make a definitive statement on the taxation of employer-paid dental and health plan premiums.

But it never happened. Instead, Mr. Martin chose to remain silent on the issue, and budget day 1995 came to an end without a single reference to either oral health or dentistry's six-month lobbying campaign against the dental premium tax.

Mr. Martin's silence was good news. The tax, as proposed, would have resulted in the eventual demise of third-party dental plans in Canada, and ultimately led to a serious decline in the oral health of Canadians.

Still, given the size of Canada's debt, and Mr. Martin's very real need to bring the federal deficit under control, the quick cash-fix offered by the taxation of dental plan premiums must have been very tempting for the finance minister. Health considerations aside, indications are that the tax could have raised as much as \$2.5 billion in new revenue this year.

Mr. Martin first proposed taxing employer-paid dental plan premiums in late 1993, just prior to bringing down his 1994 budget. Only an intensive, last-minute lobbying cam-

paign by CDA and the corporate members saved the day.

But the issue didn't go away. By late spring, there was every indication that Mr. Martin was having second thoughts about a premium tax. Realizing that the oral health of Canadians was still at risk, CDA and the corporate members initiated a full-scale public awareness campaign against the tax.

The intent of the campaign was two-fold. It alerted dental patients to the financial and health implications of a premium tax, and, with the help of individual dental offices, it enlisted their support in a letter-writing campaign directed toward Mr. Martin, Health Minister Diane Marleau, and individual MPs.

In October, Mr. Martin confirmed his plans by announcing that the taxation of employer-paid dental and health plan premiums would be included in pre-budget discussions. CDA responded by distributing our "Enough is Enough" poster to every dental office in Canada, along with a letter encouraging dentists to press on with the letter-writing campaign.

By budget day, more than 300,000 letters had been sent to Ottawa by concerned dental patients. That's quite an achievement. Because of CDA's campaign, every federal politician in this country is now fully aware that the vast majority of Canadians are strongly opposed to the taxation of employer-paid dental plan premiums. And both politicians and citizens alike realize that a premium tax would have a highly disruptive effect on Canada's unique oral health-care delivery system.

With this type of campaign, there is a tendency for people to sit back and say: "A few letters aren't going to make a lot of difference, so why should I bother."

Not this time.

In January alone, 47,000 "Say no to a tax on dental benefits" letters were sent to the finance minister's office. Each one of those letters had to be given to the patient by a member of the dental team, each one had to be signed by that patient, and each one had to be put in an envelope and sent to Ottawa.

Clearly, dentistry's success on budget day was not brought about by CDA alone. It was the result of the combined efforts of CDA, our corporate members, and the Canadian dentists and dental patients who participated in the letter-writing cam-

paign. We united behind a common cause. We kept up the pressure. And we achieved our goal.

Unfortunately, the campaign to preserve Canada's oral health-care delivery system may be far from over. In January, when he met privately with CDA and other interested organizations, Mr. Martin made it clear that tax equity continues to be a pressing concern. The problem, as he sees it, is that the Canadians who belong to employer-paid dental plans enjoy a distinct tax advantage that is not available to those with no private dental insurance coverage.

CDA has made a commitment to work with both government and the insurance industry to resolve the equity issue, and this will be high on our list of priorities for 1995. We will also continue to analyze other concerns arising out of the budget, such as the elimination of the tax deferral provisions for professional corporations and individuals reporting business income. And we will remain vigilant on the RRSP issue through our ongoing participation in the Alliance for the Preservation of Retirement Savings.

Despite CDA's victory in the tax campaign, the future of Canada's oral health-care delivery system remains unclear. With the threat of flex plans, deductibles and managed care looming over the horizon, we still have a lot of work to do. But one thing is clear. United, this profession is a force to be reckoned with.

The key to unity is membership in your national, provincial and local associations. After budget day 1995, I challenge you to tell me that the cost of CDA membership is too high, or that it doesn't give you good value.

Many of you, in particular the auxiliary personnel who organized the letter-writing campaign in your office, played a key role in bringing about our budget day success. Thank you for your contribution and your support.

*Bryun Sigfstead, DDS
President of the Canadian Dental Association*

JOURNAL

April/
Avril
1995
Vol. 61
No. 4

BOOK REVIEWS

Local Anesthesia of the Oral Cavity

by J.T. Jastak and Yagiela D. Donaldson

W.B. Saunders Co., 1994.

339 pages

ISBN: not available.

When I received this book to review, I subconsciously thought that it would be another typical text on oral local anesthesia. However, this soft-cover first edition has been a very pleasant and refreshing surprise.

It contains 14 chapters beginning with an in-depth and up-to-date introductory discussion on peripheral nervous system anatomy and local anesthetic pharmacology — some readers may find that these initial chapters rely heavily on a solid background in physiology and pharmacology. These chapters are followed by a similar discussion on vasoconstrictors, concentrating on epinephrine. There are also chapters on patient evaluation, relevant anatomy (including a very good review of the trigeminal nerve), armamentarium, basic principles of injection and virtually the full gamut of techniques — including the more advanced techniques — for both maxillary and mandibular anesthesia. There is a very valuable chapter on supplemental techniques including the periodontal ligament injection, intraseptal, intraosseous and jet injections to name a few.

The two chapters on causes of anesthetic failure, complications, and side effects following intraoral local anesthesia are complete and very well done. A final chapter on electronic dental anesthesia is similarly well done and gives an objective presentation on this rather controversial subject.

This is a well-written book that provides the reader with all he or she needs to know about the safe and effective administration of oral local anesthesia. It is well illustrated with photographs and line drawings, and, where scientific data is discussed, it is well illustrated with graphs and tables from recent jour-

nal articles. Indeed, the entire body of the text is referenced directly using ample classic and recent references. Each chapter concludes with a bibliography that would satisfy the most inquisitive reader. Finally, the entire book concludes with an index.

This book presents an excellent review of the subject without being overly exhaustive, and carries a different slant than many other textbooks on the subject. A great deal of material is well presented in a relatively small textbook.

I would firmly recommend this text to any dental student, practicing dentist or physician, and, in particular, any medical or dental professional undertaking postgraduate studies, particularly in anesthesiology or related areas.

Reviewed by:

E.R. Young, B.Sc., DDS, B.Sc.D, M.Sc., FADSA

Associate professor and head, department of anesthesia, faculty of dentistry, University of Toronto and the Wellesley Hospital.

Sedation: A Guide to Patient Management, third edition

by Stanley F. Malamed

Mosby-Year Book Inc., 1994.

641 pages, 226 illustrations; \$71

ISBN: 0-8151-5736-3

This is the third edition of Malamed's popular text which is primarily designed for undergraduate medical or dental students. This edition is co-authored by Dr. Christine Quinn and has several changes over previous editions, although the main thrust, content and comprehensiveness remains similar. The changes to this edition introduce several of the newer routes of drug administration (i.e. transdermal, sublingual and intranasal) as well as some of the newer drugs and drug preparations.

It is the authors' stated intent that this book not be used as a sole source of knowledge but rather in conjunction with courses that cover the more in-depth areas of physi-

ology, pharmacology and related medicine plus a practical hands-on component.

This book is divided into eight sections. Section one is introductory, and section two discusses the scope of anxiety control from iatrosedation through to general anesthesia including basic patient psychological and physical evaluation. Particular emphasis is placed on patient monitoring. Sections three, four and five discuss actual pharmacosedation involving oral, rectal and intramuscular routes. As well, sections four and five discuss inhalation conscious sedation (nitrous oxide). Section six introduces the reader to general anesthesia while section seven addresses the handling of medical emergencies at a practical level. The final section, eight, discusses four groups of special patients — pediatrics, geriatrics, disabled and mentally compromised patients.

This is an excellent, practical, soft-covered text which addresses a vast amount of material. The eight sections described are further divided into 39 separate chapters which, on thorough reading, may seem repetitive. The text is, for the most part, referenced directly in the body and concludes with an extensive and useful index. Most references, like the text itself, are of a practical rather than purely scientific nature. It is well illustrated with black and white photographs, line drawings and tables, and provides rather relaxed reading.

This is a very practical text for use primarily at the undergraduate level as well as for reference by general practitioners and postgraduate medical and dental students. As with past editions, it lacks the basic scientific approach desired by the intense reader. The authors must be complimented on a very complete edition which incorporates most of the recent additions to the subject. In addition, the authors are careful to define the limitations and risks of each of the techniques discussed with much emphasis on the need for the practitioner to secure adequate didactic

and clinical training prior to implementing the techniques discussed into his or her practice.

Reviewed by:

E.R. Young, B.Sc., DDS, B.Sc.D, M.Sc., FADSA

Associate professor and head, department of anesthesia, faculty of dentistry, University of Toronto and the Wellesley Hospital.

A Consumer's Guide to Dentistry

by Gordon J. Christensen, DMD, MSD, PhD

Mosby-Year Book, Inc., 1994.

247 pages, 411 illustrations, 330 in full color; \$95.25

ISBN: 0-8016-6776-3

This well-written, well-organized book is intended to help dental patients who have little technical knowledge of dentistry make informed decisions about the alternatives available for their oral care.

Many color photographs, diagrams, and X-rays are used throughout the book to illustrate the specific problems being discussed. Although this is a useful, demonstrative tool, patients who aren't accustomed to such graphic visual aids may find them offensive.

The language is clear and concise — both technical and lay terms are used to describe various areas of dentistry and clinical conditions. Patients reading this book should gain a clear understanding of the technical terms used in dentistry, which will help them discuss treatment plans and alternatives with their dentist in an informed manner.

Many patients will appreciate the author's candid discussion about the treatment options available and their relative costs. He also suggests which conditions warrant the patient seeking a second or even third opinion, and gives practical advice such as choosing an orthodontist who lives nearby: because "orthodontic procedures usually require many months for completion, with multiple visits to the practitioner."

The first chapter contains a list of common dental issues — from fillings, dentures and gum disease to thumb-sucking, diet and flossing —

and directs the reader to the pages where information specific to each topic can be found. As well, throughout the body of the text, frequent references are made to other passages within this text where additional information about specific topics can be found.

In Chapter 2, the author introduces the nine dental specialties currently accepted in the United States, and describes the services that each specialist provides. In Chapter 3, he suggests reliable ways to find a dentist and explains why he believes some of the common reasons for selecting a practitioner are wrong.

In the 11 chapters that follow, the author explains various areas of dentistry in detail, and describes common problems associated with each one. He begins each chapter with a general discussion about a specific area (e.g. endodontics, cosmetic dentistry, implants, oral and maxillofacial surgery, etc.) and then describes the conditions, signs and symptoms of the dental problems associated with this area. He gives detailed explanations of the treatment options available for each problem, and discusses the advantages, disadvantages, risks, alternatives, costs and results of non-treatment.

Chapter 15 is described by the author as "the most valuable chap-

ter in the book because it describes what you can do to prevent dental disease or injury. . . ." Some of the topics included in this chapter are toothbrushing, flossing, fluoride, sealants, and regular professional check-ups.

Chapter 16 is also an important chapter in that it serves as a useful reference tool for both the patient and practitioner. Its intent is to direct patients who want to extend their knowledge of dentistry to other useful sources. The author is very thorough in this endeavor and doesn't limit himself to providing a list of reference texts. He also provides extensive lists of American dental organizations, U.S. and Canadian dental faculties, and American state and Canadian provincial dental associations. In each case he provides addresses and telephone numbers.

This book is intended to help the dental consumer easily find the answer to nearly every concern imaginable about oral problems, thus allowing them to intelligently discuss their questions with dental professionals. It achieves this purpose well and would serve as a useful tool in any dental office.

Reviewed by:

*Michelle Walters, BA, Dip.J.
Journal staff writer.*

CDA MUSEUM donations requested

Memorabilia from CDA's 92-year history is now on display in antique cases in the library of the Canadian Dental Association headquarters in Ottawa.

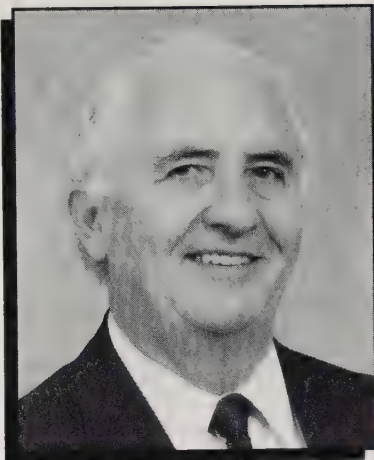
As originally planned, the displays are changed on a regular basis to suitably depict different eras of our rich dental history. Donations of museum-quality dental artifacts are still being accepted and are very much appreciated. Particularly requested are larger items such as chairs, units, cabinets and X-ray machines, plus historical photos and records.

Also of interest to dental historians are the items highlighted in the column entitled "What's it?" which appears monthly in the *Journal*. This column elicits the help of readers in identifying some of the antique items presently on location in the museum.

For further information, contact Dr. Ralph Crawford at the Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6. (613) 523-1770, or call toll-free 1-800-267-6354.

JOURNAL

April/
Avril
1995
Vol. 61
No. 4



Using The Flexible Coverage Of CDIP Insurance Plans To Your Full Advantage

Dr. James Wright

President of CDSPI

Imagine what dentistry would be like if we only had one shade, technique or material to fabricate a crown or place a restoration. Our patients would be denied the satisfaction that comes with choice and flexibility. Fortunately, though, that's not the case. We have the ability to offer truly customized service.

It's the same situation with the Canadian Dentists' Insurance Program (CDIP). Almost every CDIP plan is designed with built-in flexibility, so the plans can conform to each dentist's personal situation and best interests.

The flexibility works three ways. Insurance options enable dentists to custom tailor a plan to provide the protection they want. At the same time, the available elimination periods and coverage options allow dentists to control the amount of the premiums they pay. And specialized features particular to certain plans provide even more flexibility.

Much of the information presented in this article may be familiar to you, but hopefully it will give you some new ideas about customizing your plans.

Customized Personal Insurance

CDIP long-term disability insurance gives you five options to choose from, all of which add further protection to the plan.

If you want to be guaranteed that you'll always have the choice to purchase more coverage, you can select the Future Insurance Guarantee Option. It allows you to increase your coverage at specified times in your life — without providing medical evidence at the time of increase. Many people are denied extra coverage later in life because they develop health problems. This option ensures that extra coverage is there if you want it.

The Cost of Living Adjustment Option (COLA) is always worth considering, but especially if you're in your 20s or 30s. Without COLA, your benefit amount stays the same year to year after you suffer a disability. But with this option, your benefit increases each year according to the consumer price index. This annual compounding can make an especially significant difference if your disability is lengthy and inflation goes up.

Another option that's especially important in your earlier years, but always worth considering, is Own Occupation. If you can't practise dentistry because of a disability, but can work in another occupation, you wouldn't usually collect disability benefits. However, if you found yourself in this type of situation and you had the Own Occupation Option, your benefits would continue even if you were gaining income from another source.

Also consider the Retirement Protection Option. Contributing to your RRSP can be difficult during a disability — you may actually be without any RRSP-eligible income. But with this option, funds are put into a retirement account each month of your disability.

Now comes an option that's not quite so straightforward since the February 1995 Budget. The Deferred Income Tax Expense Option covers your income tax liability if you run your practice on a deferred year-end, and your income tax comes due while you're disabled. But the new federal budget dictates that our business taxation periods must now follow the calendar year, and outlines a 10-year tax schedule for those who currently have deferred year-ends. CDSPI must therefore determine exactly how this new ruling will affect dentists who currently have the Deferred Income Tax Expense Option, or are considering it. We'll let you know in the very near future.

With CDIP long-term disability insurance, you also have the flexibility of three elimination periods: 30 days, 60 days and 90 days. Your premium costs are lower if you choose a longer elimination period. Many dentists choose to divide their coverage among two or three elimination periods. The general guideline — but not the only deciding factor — is that the more resources you have to cover

your cost of living in case of a disability, the longer the elimination periods you may want to choose.

There's a specialized feature for dentists who continue to practise full time or part time throughout their 60s. Standard CDIP long-term disability insurance covers you to age 65, but you can apply to extend your coverage to age 70. This extension makes the plan as attractive as any plan on the market today.

CDIP office overhead expense insurance — the plan that covers your office expense costs during a disability — gives you the choice of two options: the Future Insurance Guarantee Option, and the Own Occupation Option. It also gives you a choice of selecting a

14-day elimination period, a 30-day elimination period, or both.

You can gain further control over the coverage you purchase by dividing your office overhead expense premium dollars into two types of coverage. Level coverage is more expensive, but gives you 100 per cent of your benefit amount each month. Reducing coverage — with lower premiums — gives you 100 per cent of your benefit amount for the first three months, then reduces. Level coverage is designed for fixed expenses, and reducing coverage is intended for expenses you can reduce during a long disability.

With CDIP basic life insurance, there is one option available — the

Future Insurance Guarantee Option.

Our basic life insurance also offers a specialized feature that allows you to maintain 100 per cent of your coverage up to age 80. Normally, your standard CDIP coverage amount reduces at ages 65, 70 and 75. But the coverage you normally lose at these ages can be converted to individual coverage — without medical restrictions — through Sun Life Assurance Company of Canada, the provider of the CDIP plan.

CDIP dependents' life insurance gives you coverage options based on your personal situation. You can choose spouse only, spouse and children, or — in certain situations — children-only coverage.



CDA Retirement Savings Plan

✓ Check Out Superior Investment Performance

CDA Fund Performance (for periods ending Feb. 28, 1995)[†]
(Checks indicate Superior Performance Compared to Industry Averages*)

CDA Fund	1 Year		3 Year		5 Year		10 Year	
	CDA	Other*	CDA	Other*	CDA	Other*	CDA	Other*
Aggressive Equity	n/a		n/a		n/a		n/a	
Common Stock	✓ -4.2%	-6.4%	7.6%	8.2%	✓ 6.7%	6.4%	✓ 9.8%	8.0%
Balanced	✓ -1.9%	-2.4%	6.2%	7.4%	7.8%	8.2%	✓ 9.4%	8.6%
Bond & Mortgage	✓ -0.3%	-0.7%	✓ 7.6%	7.1%	✓ 10.4%	9.9%	10.4%	10.5%
Money Market	✓ 5.2%	4.6%	✓ 5.4%	4.9%	✓ 7.6%	7.1%	✓ 8.5%	8.1%
International Equity	✓ -2.6%	-5.1%	n/a		n/a		n/a	
European	✓ 13.1%	-5.1%	n/a		n/a		n/a	
Pacific Basin	✓ -9.4%	-12.6%	n/a		n/a		n/a	
Emerging Markets	✓ -16.8%	-27.6%	n/a		n/a		n/a	

[†] CDA figures indicate annual compound rate of return with all fees deducted. The figures are historic rates based on past performance and are not necessarily indicative of future performance.

* Comparison performance figures are Globe and Mail averages for the range of similar funds offered in the marketplace before sales charges, as published in the March 16, 1995 issue.

For current unit values and GIC rates call CDSPI toll-free at 1-800-561-9401, ext. 525.
(Metro Toronto call (416) 296-9401.)



JOURNAL

April/
Avril
1995
Vol. 61
No. 4

Gentle Re

Practical and decorative, CDA's new series of wall plaques remind patients to practice good dental health habits and more. All eight colourful plaques measure 11" x 8 1/2" and are laminated for durability and mounted on masonite for easy hanging. Each entertaining wall plaque offers an important dental health message or gentle reminder that

Please

let us know if your medical history or medication has changed since your last visit.

Thank you.



We accept

major credit cards for payment



We adhere to

infection control procedures known as universal precautions for your protection.

We would be pleased to discuss these procedures with you.



A healthy smile

can last a lifetime.



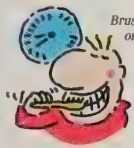
CANADIAN
DENTAL
ASSOCIATION



reminders

helps your patients become more informed. It's a simple way to communicate to your patients. To order your own Gentle Reminder plaques, call 1-800-267-6354 or use the convenient order form in your brand new CDA product catalogue. Available to CDA members only. \$19.95 each plus taxes and shipping.

5 point
Prevention plan



Brush after every meal, or at least once a day, preferably at bedtime.

Floss daily to reach between teeth and gumline.

Eat a well balanced diet, avoid sticky sweets and don't smoke.

Your gums are just as important as your teeth - are they red, puffy or tender? Call your dentist.

Don't wait until it hurts - see your dentist for regular checkups and professional cleanings.



We welcome
new patients

Thank you for recommending us to your family and friends.



Protect a
Growing smile
with early dental visits.

Regular dental visits should begin at about age 3.



Payment
for routine services would be appreciated at the time of your visit.

Please inquire regarding payment options.
Thank you.



CALL 1-800-267-6354 to order
or use order form in
your NEW CDA
Catalogue

Our accidental death and dismemberment insurance and hospital cash insurance give you the choice of individual coverage or family coverage. And with hospital cash insurance, you can choose between two coverage options with different benefit amounts and premiums.

Finally, CDIP personal umbrella liability insurance offers three coverage options, giving you control over the premiums you pay.

Your Choices In Practice Coverage

CDIP TripleGuard coverage is designed for convenience. You get all the essential coverage a dental practice needs — economically. There are, however, several extras many dentists require, so these are offered separately.

You can choose the Equipment Breakdown Option, which is important coverage because equip-

ment malfunctions and resulting loss of income aren't covered by office contents insurance.

Also, under TripleGuard, you can purchase extra comprehensive general liability insurance. To further customize your plan, you can also acquire extra coverage for any of the following (basic coverage is automatically provided for each of these categories): valuable papers; money, securities and precious metals; additional lease expense; accounts receivable; rental value; extra expenses; employee dishonesty; and data processing insurance.

TripleGuard also gives you control over the premiums you pay by offering the choice of two deductibles — either \$250 or \$500.

CDIP malpractice insurance gives you the choice of three deductibles. In addition, you can choose from four coverages — allowing you a great deal of control over your insurance amounts and the cost of your premiums.

As you can see, in both personal and professional insurance, the Canadian Dentists' Insurance Program gives you control over the insurance you buy. Of course, you don't want to be making too many choices — you'd rather concentrate on dentistry than become an insurance expert. And you don't have to make too many choices, because these plans are specifically designed for dentists. But you are given enough flexibility — through insurance options, elimination periods and coverage options, and specialized features — to make sure each plan meets your individual needs.

Dentists are accustomed to providing customized service — after all, we give our patients individual treatment every day. So it's good to know that we're receiving customized service too — with an insurance program that gives us just the right amount of choice, for flexibility and control. ■

EVER THOUGHT OF BEING A BIG BROTHER?

Share a moment that'll last a lifetime!



Contact your local Big Brother agency today.



BIG BROTHERS OF CANADA
LES FRÈRES GRANDS DU CANADA

There Is An Alternative To High Priced Computer Systems!

Canadian dentists coast-to-coast have used MaxiDENT dental management software for twelve years with immense satisfaction. Canada's Easiest-To-Use dental system handles billings, receivables, claims, CDAnet EDI, statements, recalls, practice marketing, and much more, and gets better with every update!

MaxiDENT includes an electronic appointment scheduler, two word-processors, a step-by-step illustration-packed User's Guide, AccPac Payables, Payroll, and General Ledger plus a free upgrade to our new Windows version.

Reliable, proven, DOS-based, multi-user, multi-tasking MaxiDENT runs on IBM compatibles and outperforms systems costing many times more. It can be used with Microsoft Windows, and never needs costly Unix or Xenix.

MaxiDENT is so easy to learn and use, just follow our instructions and run it in your office within days. Or choose low-cost professional on-site training. Either way, you have a full year's support which includes unlimited toll-free hotline help and free updates. No wonder Oral Health called MaxiDENT Canada's best kept secret!

When you order MaxiDENT software, we help you get your best price on computer equipment from your local vendor, or us. Save thousands of dollars and join a growing list of satisfied users.

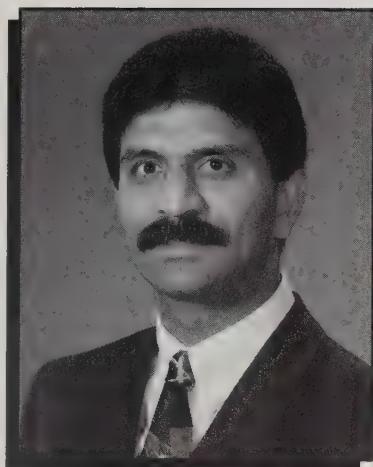
Don't be fooled by its low price of only \$4995. Learn why patients, staff and dentists love powerful MaxiDENT, how it saves time, eliminates bottlenecks, relieves stress, makes you money, and has important tax advantages. Phone toll free now without obligation for an information package, user list and demo disk.

Call Arthur Arkin, President, Maxim Computer Systems, developers of

MAXIDENT Dental Management Software



1-800-663-7199



Practice Valuation: It's not a Matter of If But When

Imtiaz Manji, B.Sc.

Principal of ExperDent

In the first few columns of 1995, we've discussed goals and long-term planning, with an emphasis on the various transitions dentists undergo in their careers, whether they're fresh out of dental school or contemplating leisurely days ahead on the golfing green. We've illustrated how dentists can achieve financial freedom by coming together to their mutual benefit. In this month's column, we'll take a closer look at one of the key tools for facilitating such business relationships: the practice valuation.

The Why of Practice Valuations

While many dentists regard practice valuations as the first step in securing the sale/purchase of a practice, their relevancy and usefulness extends beyond these exchanges. A practice valuation — done to determine the market value of a practice — is an excellent tool whether you're selling, buying, hiring an associate, determining your insurance needs, or engaging in financial or estate planning.

Practice value is all-important throughout each career stage. This holds true if you're a new dentist looking to build equity in a practice; an established dentist looking to increase the financial return and value from an existing practice; or a retiring dentist looking to protect

— and capitalize on — the value you've built up over your career.

Most often, a practice valuation is undertaken to serve as the starting point for determining the purchase price of a practice. It's the customary building block on which all future discussions and negotiations take place.

The How of Practice Valuations

Unfortunately, there isn't a specific infallible formula that yields the perfect practice valuation. The value of a practice is comprised of practice assets, both tangible and intangible. While it's not difficult to come up with a dollar value for tangible assets (equipment, instruments, supplies, furnishings and fixtures, leasehold improvements, etc.), determining the value of the intangibles — which make up a significant part of the practice equity — is more tricky. Often referred to as practice goodwill, this value is affected by a number of factors, including location; practice telephone numbers; new patient flow; referral network; patient base and demographics; staff ability and retention; financial history/profitability; service mix; practice appearance; area competition; patient retention; growth potential or limitations; and effectiveness of practice management systems.

Traditionally, determining a practice's value was done by a rule of thumb approach. Dentists would ask their financial advisors to come up with the magic figure, one which would maximize their investment while attracting a number of potential buyers. These professionals would suggest that the purchase price be "one times gross revenue" or "two times net profit plus the value of equipment." But there has been a movement away from the rule of thumb approach, as it tends to be too simplistic and may generate inaccurate results. (For instance, with the rule of thumb method, two practices with the same gross revenue would be valued equally. However, if one has 50 per cent overhead and the other has 70 per cent, then the former is definitely more valuable.)

Because of the pitfalls in the rule of thumb method, more sophisticated approaches to valuation have been developed in recent years. The following three approaches are examples of those most commonly used. Valuers and those requesting valuations must recognize that regardless of which method is employed, valuations have to be adjusted to reflect market conditions.

Gross Revenue Method

This method is closest to the rule of thumb approach in that it

calculates the value of the practice in a single step. However, it incorporates a weighting factor to account for market conditions. Here's how it works: The valuator first determines the practice's gross revenue for the past five years. The weighted arithmetic average of this five-year revenue stream is then calculated with the most recent year receiving the greatest weighting factor. Next, the valuator calculates the average growth rate for the practice over the same five-year period. Let's assume that the weighted average revenue stream over the past five years is \$500,000 and the respective weighted growth rate is nine per cent. A weighting factor — based on the growth rate and prevailing market conditions — is then assigned to this growth rate. For instance, a nine per cent growth rate may be assigned a 60 per cent weighting factor. The calculation would then be $\$500,000 \times 60 \text{ per cent} = \$300,000$. (The scale for weighting factors is adjusted depending on whether market conditions are favorable or unfavorable.)

Although this method is convenient in that it produces a practice value figure in a single calculation, it requires a highly skilled valuator to obtain accurate results. The valuator needs to pinpoint what the appropriate weighting factors should be and must be keenly aware of the forces at work in the marketplace.

Summation of Assets Method

With the summation of assets method, each tangible and intangible asset is given a value, and the sum of these values determines the total practice value.

With tangible assets, valuers usually rely on one of three formulas for assessing value: qualified appraisal, depreciated (book) value or replacement value.

There are also a number of different approaches for determining the value of intangible assets, each of which relies heavily on the experience, skill and judgement of the valuator. A combination of these methods is often used to arrive at the value of practice goodwill:

- Market trends present value relative to — and as a reflection of — other practices with like qualities, such as facility, patient base, geographic location and economic forces. For example, as a yardstick for the value of practice goodwill, the valuator could cite the selling price (less the tangible assets) of a neighboring practice.
- Chart value assigns a dollar figure to each patient chart and determines goodwill by multiplying this value by the number of active patients.
- Complex financial formulas use a practice's financial history (most often based on net profitability) and scaling factors for market conditions to value practice goodwill.

Let's assume that the valuator uses the above formulas to generate the following analysis: the appraised value of tangible assets is \$85,000 (based on a qualified appraisal, in this case) and the value of intangible assets is \$366,775. The latter figure is arrived at by taking the average weighted net profit, in this case \$215,750, and multiplying it by a market factor of 1.7 (this factor typically ranges between 0.5 and 2). Therefore, the value of the practice is $\$85,000 + \$366,775 = \$451,775$.

Capitalization of Earnings Method

This popular approach factors in the income a new owner is expected to generate from the practice. The capitalization of earnings method assumes that a dental practice's value is determined by the earnings that a new owner can achieve and a capitalization rate. This rate — which considers a number of market factors, including the characteristics of the community where the practice is located, current conditions in the dental market, practice conditions and overall economic conditions — can be likened to a return on investment. Earnings are defined as *the profit the practice makes after paying all expenses and a reasonable salary to the dentist(s)*.

As the capitalization rate is the subjective part of the equation,

here again, the experience of the valuator is critical. Generally, however, capitalization rates range from between 16 and 30 per cent. They usually take into consideration risk-free rate of return, liquidity, and practice risk.

- The risk-free rate of return assures the buyer of a minimum return on their investment (the practice) and is usually equivalent to conservative, guaranteed investments such as long-term government bonds. (We'll assume the rate of six per cent for this illustration.)
- The liquidity component recognizes that a professional practice is not a liquid investment and cannot be easily converted into cash. The structure of the transaction determines how this factor will play into the equation. Because the cash flow of the purchaser is lessened by their costs to finance the purchase and administer their debt, the liquidity allowance is lower if the owner dentist is providing financing and higher if the purchaser must rely on outside financing. (We'll assume that the liquidity rate is set low, at five per cent, because the owner dentist is assisting with financing.)
- Practice risk is involved in every practice purchase. A valuator looks at the factors that influence that risk, be they market conditions or the terms of transfer, and assigns a risk rate accordingly. (We'll assume a practice risk of only six per cent to reflect the fact that the transaction isn't a complete buy-out but rather a planned equity associate transition.)

When the three rates are added together (six per cent + five per cent + six per cent), the capitalization rate equals 17 per cent. To determine the practice value, divide the average weighted earnings by the capitalization rate. In this example, let's assume that the practice's weighted (average) earnings are \$62,750 (after expenses and a reasonable dentist salary have been paid). Therefore, the practice would be valued at $\$369,117$.

(\$62,750 divided by 17 per cent = \$369,117).

More Than Mere Methods

This article provides an overview of some of the methods used to value dental practices. These tools — often combined and averaged to determine practice value — are best employed by skilled valuers. (Please note that variations of these methods and other approaches can be used, based on the preferences and experiences of the valuator.) You can't expect accurate assessments by asking your financial advisors to give you a practice value in 24 hours. The procedure is much more involved and complex.

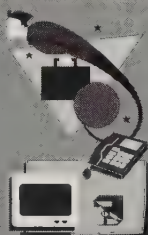
Keep in mind that the methods for determining practice value are directly related to the structure of the transaction. Both price and

terms influence the potential to strike a deal or not. As a seller, you only want to engage in a financing arrangement with a buyer with whom you have a relationship of trust, i.e., an associate who's been working in the practice for some duration. As a buyer, you want to seriously consider what you're getting for the purchase price and ensure that your financial advisors have been realistic in their productivity projections. Ask them — and yourself — if the present market factors and financing details support the valuation figure. Sometimes adjustments need to be made to even the most meticulous valuations.

Presently, the supply and demand issue favors suppliers, those who are seeking to sell their practices. With more buyers scouting around for practices, sellers have a

distinct advantage. But the buyers may soon find the ball in their court. As baby-boomer dentists begin to retire, there will likely be a surplus of practices on the market, which will force sellers to be extremely competitive in their asking prices. However, regardless of the cyclical nature of supply and demand, sellers and buyers can use valuations to pave the way for successful negotiations. Win-win deals are easily obtained when both parties act in good faith and are willing to explore options that will meet both their needs. ■

(More detailed information about practice valuations is included in volume II of CDA's **Taking Care of Business program — Associate and Transition Planning**.) For more information on this program, or to obtain your copy, see pages 351 and 352.



LIBRARY PACKAGE

The Library package for April is **ORAL LICHEN PLANUS**.

This package is available to CDA members for a fee of \$5. Call the library at: 1-800-267-6354 ext. 223; or fax your request to: (613) 523-6574.

New books in the library — each of the following can be borrowed by CDA members for a \$5 shipping fee.

Berkowitz, S. *The cleft Palate story*. Quintessence, 1994.

Hovland, E.J. [editor]. *Traumatic injuries to teeth*. *Dental Clinics of North America*, January 1995.

Koerner, K.R. and Medlin, K.E. *Clinical procedures for third molar surgery*. 2nd ed. Penwell, 1995.

Laskin, D.M. *Medical management of temporomandibular disorders*. *Oral & Maxillofacial Surgery Clinics of North America*, February 1995.

Trotman, C-A. and McNamara, J.A. *Orthodontic Treatment: Outcome and effectiveness*. University of Michigan, 1995.

LISTERINE

ANTISEPTIC - ANTIPLAQUE
ANTINGIVITIS - MOUTHWASH

INDICATIONS: Helps reduce gingivitis (minor inflammation of the gums caused by plaque above the gumline) when used in a conscientiously applied program of oral hygiene and dental care. Kills the germs that cause bad breath, plaque, gingivitis and sore throats due to colds.

CAUTIONS: Keep out of reach of children. Do not swallow. Not to be used by children under 12 years of age. In case of accidental ingestion, contact a Poison Control Centre or doctor immediately.

DOSAGE: Rinse full strength with 20 mL for 30 seconds twice a day.

MEDICINAL INGREDIENTS: Eucalyptol 0.091% w/v, Thymol 0.063% w/v, Menthol 0.042% w/v.

NON-MEDICINAL INGREDIENT: Alcohol.

NOTE: Cold temperatures may cloud this product, its efficacy will not be affected.

SUPPLIED:

Original Listerine: Clear, amber liquid available in bottles of 250, 500, 750, and 1,000 mL.

Cool Mint Listerine: Clear, blue, cool mint flavoured liquid available in bottles of 250, 500, 750, and 1,000 mL.

Fresh Burst Listerine: Clear, green, mint flavoured liquid available in bottles of 250, 500, 750, and 1,000 mL.

LISTERINE FIGHTS GINGIVITIS
WITHOUT STAINING

WARNER
WELLCOME

*TM Warner-Lambert Company Inc. use Scarborough, Ontario M1L 2N3

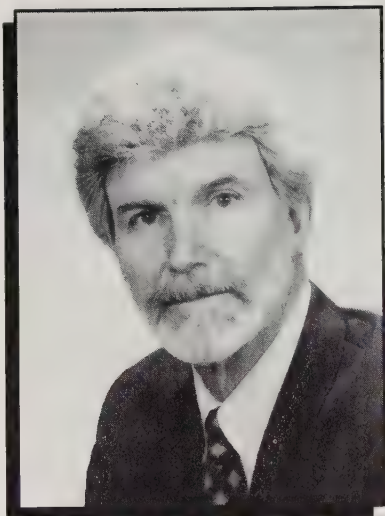


JOURNAL

April/
Avril
1995
Vol. 61
No. 4

NEWS UPDATE

Manitoba Elects New President



Dr. Tom Dobbs.

A Winnipeg pediatric dentist has been elected president of the Manitoba Dental Association (MDA).

Dr. Tom Dobbs became MDA president January 26 during the association's 111th annual meeting. A graduate of the University of Tennessee College of Dentistry, he completed his graduate training at the University of Manitoba and the Children's Hospital of Winnipeg. He has been in full-time private practice as a pediatric dentist since 1972.

Dr. Dobbs has been a member of the MDA board since 1991, and served as the association's vice-president last year. He will be joined on the 1995 Manitoba executive by Dr. Barry Rayter (vice-president) and Dr. Mark Buettner (past-president). ■

DCF, Aurum Ceramic Announce \$1-Million Challenge

Aurum Ceramic and the Dentistry Canada Fund (DCF) are joining forces to launch a series of fund-raising golf tournaments this summer.

The tournaments, to be held at 20 different golf courses across Canada, could raise more than \$300,000 for DCF in 1995. Sponsored by Aurum Ceramic/Classic, Midland Walwyn, Nobelpharma Canada Inc., and the

Château Cartier Sheraton, they will also give 40 lucky participants the chance to compete for a \$1-million grand prize.

"Closest-to-the-hole" competitions will be held during each of the 20 tournaments to select 40 million dollar finalists. Every golfer who enters an Aurum Ceramic/DCF tournament and pays the entry fee will automatically have a chance at the top prize.

Twenty dollars of each entry fee will go to DCF, which will issue a charitable receipt in that amount to all tournament participants. If a finalist sinks a hole-in-one to collect the \$1-million top prize, DCF will also receive a lump-sum charitable donation of between \$250,000 and \$300,000.

Two \$1,000,000 shoot-outs will be held in 1995, one at Kananaskis, Alberta, on July 14, and one at Aylmer, Quebec, on August 27, 1995.

For more information on the tournaments, or to enter the event in your area, call DCF's toll-free golf hot line: 1-800-661-1169.

DCF is the only non-profit, charitable organization in Canada dedicated to encouraging optimal oral health for all Canadians through

education, research and awareness programs.

Dates and Times

May 5: Vernon, B.C.; Predator Ridge Golf & Country Club

May 6: Castlegar, B.C.; Castlegar Golf Club

May 12: Vancouver, B.C.; Seymour Golf & Country Club

June 9: St. Catharines, Ont.; Rockway Glen Golf & Country Club

June 9: Medicine Hat, Alta.; Medicine Hat Golf & Country Club

June 12: Calgary, Alta.; Pinebrook Golf & Country Club

June 16: Grande Prairie, Alta.; Grande Prairie Golf & Country Club

June 23: Kelowna, B.C.; Predator Ridge Golf & Country Club

July 14: Winnipeg, Man.; Quarry Oaks

July 14: Kananaskis, Alta.; Kananaskis Golf & Country Club

Aug. 17: Edmonton, Alta.; Indian Lakes

Aug 25: Renfrew, Ont.; TBA

Aug 27: Aylmer, Que.; (Ottawa) Chaudière Golf Club

Endodontists Name New Officers

Dr. Paul Teplitsky of Saskatoon was installed as president of the Canadian Academy of Endodontics August 27.

A past-president of the Saskatoon Dental Society, Dr. Teplitsky received his DDS from the University of Saskatchewan in 1972. He then completed an M.Sc. certificate program in endodontics at the University of Minnesota, graduating in 1981.

Dr. Teplitsky is a faculty member of the college of dentistry, University of Saskatchewan, and is currently the director of the division of endodontics and associate dean. He is joined on Saskatchewan's 1995 executive by: Drs. Terry Smorang (president-elect); Cal Pike (treasurer); Carl



Dr. Paul Teplitsky

Hawrish (secretary); Ray Greenfield (constitution and bylaws); and Wayne Pulver (past-president). ■

Sept 8: Victoria Golf, B.C.; Olympic View

Sept 8: Kamloops Golf, B.C.; Rivershore

Sept 15: New Glasgow, N.S.; Abercrombie

Sept 22: Lethbridge, Alta.; Paradise Canyon

TBA: Montréal, Que.; TBA

TBA: Cornwall, Ont.; TBA ■

New President For Prosthodontists

A well-known Alberta dentist has been elected president of the Association of Prosthodontists of Canada (APC).

Dr. Brian Kucey of Edmonton became president of the association last September, following its 1994 annual meeting. A past-president of the Canada section of the American College of Prosthodontics, he is currently councillor for prosthodontics to the Royal College of Dentists of Canada and the president of the Alberta Academy of Prosthodontics.

Dr. Kucey received his DDS from the University of Alberta in 1981. From there he went on to the University of Southern California, where he completed an advanced prosthodontics program and earned his M.Sc.Ed and a certificate of medical education. He has been in private practice in Edmonton since 1985.

In addition to holding several dental distinctions, Dr. Kucey is involved in fund raising for the United Way.

Joining Dr. Kucey on the APC executive are: Drs. Morley Rubino, president-elect; Benoit Soucy, vice-president; Anthony Sneazwell, secretary-treasurer; Joanne Walton; Don Kramer; Robert Loney; Ken Sutherland; Graham Pettapiece; and Jack Gerrow, past-president. ■

Going To the Dentist

Two Winnipeg teachers have assembled a kit to help new Canadians learn how to access dental care and communicate with their dentist.

Called *Going to the Dentist*, the kit consists of a 62-page manual, suggested lesson plans, 50 color photographs and a series of 10 lami-

Get Ready For Dental Health Month



At least one North Bay dental practice is gearing up for Dental Health Month this April. Dr. David S. McParland's up and coming dental team includes (r to l): Maura McParland and Madison Walker (seated); Hailey Walker, Kathleen McParland, and Samantha McParland (standing).

nated visuals. It was developed for Manitoba Culture, Heritage and Citizenship by Mickey Wener, an assistant professor in the University of Manitoba's school of hygiene, and Barbara Dick, who teaches an English as a second language (ESL) program at an inner-city Winnipeg high school.

The kit helps new Canadians to understand why people seek dental care; who provides dental care; how and where to seek dental care; how to make an appointment; what happens at the first appointment; the importance of a health history; what some common dental procedures entail; and the potential payment options that may be available.

Reports from ESL teachers indicate that the kit has led many of their students to seek dental care.

"In addition to ESL teachers, it has obvious application for the oral health promotion efforts of dental professionals," said Ms. Wener. "The kit has been used as the background for several dental hygiene presentations and oral health displays for Canadian newcomers in Manitoba."

The complete kit is available for \$195, but individual components may be purchased separately. For

more information, contact: Mickey Wener, 6 Exmouth Blvd., Winnipeg, MB R3P 0C1, or call: (204) 885-7180; fax: (204) 896-0983. ■

CDC Releases New TB Prevention Guidelines

New tuberculosis guidelines released recently by the U.S. Centers For Disease Control and Prevention (CDC) could affect American dentists, says the Academy of General Dentistry (AGD).

According to *AGD Impact*, the academy's news magazine, the CDC guidelines suggest that dental personnel should undergo periodic TB testing and "learn to recognize TB symptoms such as persistent coughing, bloody sputum, severe weight loss, or wasting syndrome." Dental staff suspected of having TB are advised not to return to work until they have obtained therapy; a physician has excluded the possibility of TB infection, or a physician has certified that they are no longer infectious.

In addition, the guidelines call on dentists to develop and implement "written policies and protocols to

ensure rapid identification and isolation, diagnostic evaluation, and treatment of people likely to have TB."

It is anticipated that the U.S. Occupational Health and Safety Administration (OSHA) will approve a tuberculosis prevention rule, based on the new CDC guidelines, by the end of 1996.

The risk of contracting TB in the dental office is believed to be extremely low. ■

OBITUARIES

Bannerman, Dr. John Allan: Passed away January 19 at the age of 68. A 1951 graduate of the University of Toronto's faculty of dentistry, Dr. Bannerman practised in Winnipeg for 38 years. He was a life member of the Canadian Dental Association.

Barnabe, Dr. W.L.: A 1938 graduate of the University of Toronto's faculty of dentistry, Dr. Barnabe served with the Canadian Armed Forces for the duration of the Second World War. He lived in Ottawa, Ont. where he practised dentistry for over 40 years.

Baynton, Dr. William J.: A graduate of the University of Toronto's faculty of dentistry in 1955, Dr. Baynton was retired and living in London, Ont. He died February 3, 1995.

Butcher, Dr. Norman A.: He graduated from the University of Toronto's faculty of dentistry in 1943. A resident of Victoria, B.C., Dr. Butcher was a life member of the Canadian Dental Association. He died November 5, 1994.

Foote, Dr. John Calvin: After serving overseas in the First World War as a sergeant with the Canadian Engineers, he went on to graduate from the University of Toronto's faculty of dentistry in 1924 and practiced in Victoria, B.C. for 42 years. He also served with the Canadian Army Dental Corps (major) during the Second World War. Dr. Foote was a life member of the Canadian Dental Association. He died February 18 in his 100th year.

"WHAT'S IT?"

This month's "What's It" mystery item comes to us from Dr. Ken Szainwald of Toronto, Ontario. Called an Ortholator, it is about six-inches long, has several spring-activated moving parts, and comes in a fancy wooden box lined with blue velvet. Patented by the Bard-Parker Company of

Danbury, Connecticut, it may be some sort of a vertical dimension measuring device.

Readers who are familiar with the Ortholator and how it was used are asked to write the editor, Dr. P. Ralph Crawford, at: CDA, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6.



Grandy, Dr. J.R.: A 1943 graduate of the University of Toronto's faculty of dentistry, Dr. Grandy retired in 1986. He was a life member of the Canadian Dental Association. He died last year.

Konyk, Dr. Leo Nicholas: Born in Winnipeg, Manitoba, September 23, 1934. He attended McGill University and graduated with a B.Sc. (Phys. Ed.) and DDS degree. Dr. Konyk was an accomplished hockey and football player. He was director of dental health for the City of Winnipeg until his retirement in June 1994. He died February 16, 1995, at the age of 60.

McGaughey, Dr. James: Died suddenly at his residence in Sherwood, P.E.I., February 6, at the age of 79. Dr. McGaughey was a 1951 graduate of Dalhousie University's faculty of dentistry, and a life member of the Canadian Dental Association.

Reid, Dr. Robert D.: Retired since 1988 and living in Prince Albert, Saskatchewan, he was a 1939 graduate of the University of

Toronto's faculty of dentistry. Dr. Reid was a life member of the Canadian Dental Association. He died December 29, 1994.

Reine, Dr. Lenni C.: A 1972 graduate of the University of Toronto, Dr. Reine practised in Etobicoke, Ont. He died November 26, 1994.

Rollaston, Dr. Ernest: A 1940 graduate of the University of Toronto's faculty of dentistry, he retired in 1985 and was residing in Toronto, Ont. Dr. Rollaston died in November 1994.

Rudell, Dr. William M.: From Newcastle, Ont. He was a 1944 graduate of the University of Toronto's faculty of dentistry, and a life member of the Canadian Dental Association. He died last January.

Stephen, Dr. Robert Ian: A graduate of the University of Alberta's faculty of dentistry in 1958, Dr. Stephen practised in Estevan, Saskatchewan, and in Winnipeg until his retirement in 1986. He died suddenly on January 26.

GUARANTEED TO PREVENT DECAY IN DENTISTS.



No one wants to see their hard earned profits being eaten away by all the costs involved with running, or starting up, a practice. We've got a plan to help prevent financial decay. It's called the Scotia Professional Plan™, and you'll

find it right next door at Scotiabank. It's a unique plan we've designed specifically to save dentists time and money. You'll receive higher loan limits at lower interest rates. Interest on current accounts at Money Market rates.



Pre-approved overdraft protection. A ScotiaGold® VISA* card with no annual fee. A specially trained Scotiabank manager will customize the Plan for you. Whether that means 100% financing for your business or personal needs.† Or meeting your longer term investment goals. We'd like to meet with you to tell you more. Just contact your local Scotiabank branch for a free financial check-up.

SCOTIA PROFESSIONAL PLAN...NOW AVAILABLE ON CDAnetplus



THE TECHNICIAN

"The function and wear resistance of Ivoclar teeth are outstanding."

THE DENTIST

"No other denture tooth looks as beautiful or as natural as Ivoclar."

strength.



beauty.

Ivoclar... the world's most beautiful tooth.

Only Ivoclar teeth provide both qualities so crucial to denture teeth: Superior strength plus exceptional esthetics. Studies show that Ivoclar teeth demonstrate outstanding wear resistance.¹ And our exclusive Perl™ Effect makes them incredibly lifelike. Use our unique chromatically arranged Chromascop™ shade guide to select teeth in hardened acrylic, composite or porcelain. See Ivoclar denture teeth in person to appreciate the beautiful difference. For more information, call Ivoclar Williams toll free, 1-800-5DENTAL in the U.S., 1-800-263-8182 in Canada.



IVOCAR WILLIAMS

ANESTHESIA



Local Anesthetic Use By Dentists In Ontario

D.A. Haas, DDS, PhD, FRCD(C)

D. Lennon, BDS, MBA

ABSTRACT

A mail survey to obtain data on the annual use of local anesthetics in dentistry was sent to each of the 6,271 certified dentists in Ontario in 1993. The survey asked dentists to identify the different types and total amounts of local anesthetics used in their practice yearly. A total of 2,426 dentists responded to the survey. Based on extrapolation of the data collected, it is estimated that more than 11,000,000 cartridges of local anesthetic are administered annually by dentists in Ontario. The distribution of use of specific types of local anesthetics and vasoconstrictors was also determined. Lidocaine with 1:100,000 epinephrine accounted for 23.4 per cent of all cartridges used, followed by articaine with 1:200,000 epinephrine (19.9 per cent), articaine with 1:100,000 epinephrine (17.9 per cent), prilocaine with 1:200,000 epinephrine (16.4 per cent), mepivacaine with 1:20,000 levonordefrin (6.4 per cent), and mepivacaine plain (6.3 per cent). Other anesthetics were used to a lesser degree. Further analysis revealed no statistically-significant differences in the use of local anesthetics among dentists who responded to the survey and non-responders. The results of this survey document the current use of local anesthetics in dentistry.

Key Words: Local anesthetics, survey, dentistry.

SOMMAIRE

En 1993, on a posté un questionnaire aux 6 271 dentistes autorisés de l'Ontario pour cueillir des données touchant les anesthésiques locaux qu'ils consomment en un an. On leur a demandé d'indiquer les différentes sortes et les quantités globales d'anesthésiques locaux qu'ils administrent dans leurs cabinets chaque année. En tout, 2 426 dentistes ont rempli le questionnaire. En extrapolant à partir des données obtenues, on estime à plus de 11 millions le nombre de cartouches d'anesthésie que les dentistes de l'Ontario consomment par année. Par ailleurs, on a déterminé comment se distribuaient les sortes d'anesthésiques locaux et de vasoconstricteurs administrés : la lidocaïne avec 1:100 000 d'épinéphrine, 23,4 p. cent; l'articaine avec 1:200 000 d'épinéphrine, 19,9 p. cent; l'articaine avec 1:100 000 d'épinéphrine, 17,9 p. cent; la prilocaïne avec 1:200 000 d'épinéphrine, 16,4 p. cent; la mépivacaine avec 1:20 000 de lévonordéfrine, 6,4 p. cent; et la mépivacaine seule, 6,3 p. cent. D'autres anesthésiques locaux ont été aussi administrés, mais moins souvent. Pour l'administration des anesthésiques locaux, une analyse plus poussée n'a révélé aucune différence d'importance statistique entre les dentistes qui ont rempli le questionnaire et ceux qui ne l'ont

pas rempli. Ce sondage indique donc la consommation actuelle d'anesthésiques locaux en dentisterie.

Mots clés: anesthésique local, sondage, dentisterie.

Introduction

It is generally accepted that local anesthetics are the most commonly-administered drugs used in dentistry. However, there is some uncertainty regarding the frequency at which the various types of local anesthetics are being administered. Although Canada's drug monitoring service documents how the prescription pharmaceuticals purchased by pharmacies and hospitals are used, it does not monitor the use of local anesthetics prepared in dental cartridges. There is no publicly-available, accurate source, where these data can be obtained.

Information on the frequency at which the various types of local anesthetics are being administered in dentistry could help researchers to determine the relative safety of these drugs. Although there are published reports of adverse reactions resulting from the use of local anesthetics in dentistry,¹⁻⁷ the clinical toxicity of these drugs remains unclear. This uncertainty stems from the unavailability of accurate data on how frequently the various

JOURNAL

April/
Avril
1995
Vol. 61
No. 4



types of local anesthetics are being administered in dentistry.

The adverse events that may follow the administration of local anesthetic injections in dental offices are often psychogenic reactions as a result of anxiety.⁸ However, there are also reports of allergy or allergic-like reactions⁹ and various types of toxicity.⁷ Some of these adverse reactions may be related to the act of injection itself. They could also be due to a pharmacologic or toxicologic effect caused by one of the constituents of the cartridge. To fully understand the significance of these adverse events, they must be related to the frequency at which the drugs are administered. Knowing the extent to which various local anesthetics are used in dentistry would make it possible to determine the significance of these adverse events.

In addition to knowing the amount of local anesthetic being used, it is important to know which drugs are being administered by dentists. Trends in anesthetic use may be changing due to new products being introduced to the dental marketplace, and the evolution of current recommendations regarding the administration of vasoconstrictors.¹⁰⁻¹⁴ The intent of this study was to determine both the types and amounts of local anesthetics being used yearly by dentists in Ontario. A mail survey of all dentists certified to practise by the Royal College of Dental Surgeons of Ontario (RCDS) was conducted to obtain these data.

Methods

The annual use of local anesthetics by Ontario dentists was estimated indirectly by determining the number of cartridges purchased by each dental facility in 1993. A covering letter, a survey (Figs. 1 and 2), and an unstamped, addressed return envelope were mailed to each of the 6,271 dentists certified to practice by RCDS in 1993. Follow-up requests were not made, as is often suggested for surveys, because the number of responses received from the first mailing was considered satisfactory.^{15,16}



Faculty of Dentistry University of Toronto

Dr. Daniel Haas
Assistant Professor
Department of Anesthesia

LOCAL ANAESTHETIC SURVEY

Dear Colleague:

This survey is being conducted by Dr. D. Haas of the Department of Anaesthesia, Faculty of Dentistry, University of Toronto. Its purpose is to determine the types and amounts of local anaesthetic formulations being used by dentists in this province, annually. Your assistance in providing this information will be most valuable and greatly appreciated.

The yearly use of local anaesthetics may be determined indirectly by calculating the number of cartridges ("Carpules") purchased for each dental office (or facility) in a recent one year period. You may wish to answer this survey by calculating the number of cartridges purchased for your office/facility for 1993 from invoices or ordering records. Alternatively, you may use any other method which accurately reflects your one-year usage, and if so, please indicate the method used.

To avoid duplication, only one completed Data Form (please see the other side) should be submitted for each dental office/facility. If another dentist will be providing the data for your office(s), please indicate this in the appropriate space at the bottom of the next page, leave the rest blank, and still return this survey. If you purchase local anaesthetics for more than one office, you may include all of the data on one form, provided that this same information will not be duplicated by another dentist. Even if you do not use any local anaesthetics in your practice, please mark the appropriate line on the other side, and return this survey. Please ensure that someone takes the responsibility for providing the data on local anaesthetic use for each location where you practise.

The Data Form lists the names of local anaesthetic formulations available for use in dental syringes. They are listed alphabetically by generic name, followed by some of their common trade names, in parentheses. Information should be recorded in the appropriate space on the Data Form for all injectable local anaesthetics purchased for your office(s) in one year.

Your name has been requested only to permit a follow-up in the event that you did not return this form. **Your personal response will be strictly confidential.** Only the cumulative data will appear in any reports.

Please return this survey in the self-addressed envelope, before December 31, 1993.

Your cooperation and your time devoted to this are greatly appreciated.

Sincerely,

Daniel Haas

Please complete the other side.

Fig. 1: The covering letter mailed to all dentists licensed by the Royal College of Dental Surgeons of Ontario.

On the survey form, local anesthetics were categorized by the generic name for each formulation. To facilitate recognition, common trade names were also included. Dentists were asked to return the survey, even if they did not use any local anesthetics in their practice or, in the case of a multi-dentist practice, if another dentist was responding to the survey. Data were recorded as received. If nec-

essary (eight cases), clarification was obtained over the phone.

To determine whether the use of local anesthetics by non-respondents and respondents was similar, a follow-up was conducted. Fifty randomly-selected non-responding dentists were contacted by telephone and asked to complete and return the survey. These data were then analyzed separately, and not included in the overall results.

DATA FORM

YOUR NAME: _____

LOCAL ANAESTHETIC:

(listed alphabetically by generic name)

Number of cartridges
used annually

- articaine 4% with epinephrine 1:100,000
(UltracaineDS Forte) _____
- articaine 4% with epinephrine 1:200,000
(UltracaineDS) _____
- bupivacaine 0.5% with epinephrine 1:200,000
(Marcaine) _____
- lidocaine 2% with epinephrine 1:100,000
(Xylocaine, Octocaine) _____
- lidocaine 2% with epinephrine 1:50,000
(Xylocaine, Octocaine) _____
- mepivacaine 2% with levonordefrin 1:20,000
(Carbocaine, Isocaine 2%, Polocaine 2%) _____
- mepivacaine 3% plain
(Carbocaine, Isocaine 3%, Polocaine 3%) _____
- Prilocaine 4% with epinephrine 1:200,000
(Citanest Forte) _____
- Prilocaine 4% plain
(Citanest Plain) _____
- Other (List name(s)) _____
Do not include data on topical anaesthetics (pastes, sprays)

If you are responding on behalf of other dentists in your office, please indicate their names: _____

If the Data Form above is left blank, please check which one of the following applies:

- You did not use any local anaesthetic in 1993: _____ or
- You did use local anaesthetic in 1993, but the data will be provided by another dentist: name(s) _____

Thank you for your time and cooperation.

cause the dentist was either unable or unwilling to retrieve the requested data.

Table III shows the survey response rate categorized by specialty. Overall, 35.4 per cent of specialists and 39.2 per cent of non-specialists responded to the survey. However, given that there were 54 anonymous replies, the specialists' response rate could be higher. Those specialties with extreme response rates, namely oral pathology and oral radiology, had sample sizes that were too low to influence the overall assessment. There is a slight under-representation of orthodontists, who are not expected to use local anesthetics.

In all, the responses indicate that 4,497,253 cartridges were used by participating dentists in 1993. This figure breaks down to 1,854 (specifically 1,853.773) cartridges per dentist. By extrapolating these results to all Ontario dentists (not taking into account the cartridges that were purchased but not used), it can be estimated that 11,625,010 cartridges of local anesthetic were used by dentists in Ontario in 1993 (6,271 multiplied by 1,853.773). Considering that some cartridges were purchased but not used, it is reasonable to state that more than 11,000,000 cartridges of local anesthetic were administered in Ontario in 1993.

The results obtained for each drug formulation are shown in **Table IV**. Drugs listed as "other" include those not readily available in Ontario, namely Ravocaine (procaine and propoxycaine) and Duranest (etidocaine). Results categorized by the local anesthetic itself are shown in **Table V**, and by the vasoconstrictor in **Table VI**. **Tables IV** and **VI** include the use of mepivacaine with 1:100,000 epinephrine. This drug was not listed as a choice on the survey form, but was listed by respondents under the "other" category.

Although there were 2,426 responses to the survey, the accuracy of extrapolating data to apply to all dentists in Ontario could not be established without further analysis. Two approaches were taken to assess the potential differences in local anesthetic use be-

Fig. 2: The survey form mailed with the covering letter.

Statistical Analysis

The chi-square test was used to analyze data that referred to the type of drug used. P values less than 0.05 were judged to be significant. Although the chi-square analysis can be used when the expected frequencies are greater than 1.0,¹⁷ it has often been suggested that this test should only be used when the expected frequencies are at least five.¹⁸ Therefore,

when an expected frequency was less than five in this study, the chi-square test was repeated by combining this group with the largest expected frequency.

Results

Of 6,271 surveys mailed, 2,426 were returned (38.7 per cent). There were 54 anonymous replies that provided useable information. An additional 13 replies were received that could not be used be-



tween survey respondents and non-respondents. Siemiatycki and Campbell have suggested that non survey respondents may be similar to late respondents.¹⁹ Therefore, the responses given by the first 500 respondents to the Ontario survey were compared with the responses of the last 500. As shown in **Table I**, no significant differences were noted between early and late respondents. This similarity was confirmed statistically, both when all groups were included (4 df, $p = 0.9516$), and when the low expected frequency group was combined (3 df, $p = 0.9361$). The average number of cartridges used by the last 500 respondents equalled 1,765 per dentist, compared with the 1,932 cartridges used per dentist by the first 500, and the overall average of 1,854.

To further assess the possibility of non-respondents differing from respondents, 50 randomly selected non-respondents were contacted by telephone and asked to reply to the survey. Thirty-one dentists complied. The distribution is shown in **Table II**. No statistically-significant difference could be demonstrated between the two groups. This similarity was confirmed statistically, both when all groups were included (4 df, $p = 0.2048$) and when the low expected frequency group was combined (3 df, $p = 0.2621$). The average number of cartridges per dentist used by the 31 non-respondents equalled 1,674, compared with the overall average of 1,854.

Discussion

Completing this survey required a significant effort on the part of the dentists who replied. The amount of time each dentist actually devoted to locating information and completing the survey would have varied from office to office, but there is no doubt that it constituted an imposition. A 38.7 per cent response rate should therefore be considered good, particularly when no reminder postcards or letters were sent, and no postage was provided for the return envelope. The Ontario dentists who responded to the survey should be commended for their

TABLE I

Comparison Of Early With Late Respondents

Local Anesthetic	Per cent distribution	
	first 500	last 500
Articaine	36.02	36.73
Bupivacaine	1.67	2.40
Lidocaine	25.37	26.70
Mepivacaine	14.36	14.17
Prilocaine	22.58	20.01

This table illustrates the percentage use of local anesthetics among the first 500 respondents compared with the last 500 respondents. A statistically significant difference could not be demonstrated (for all groups, chi-square = 0.698, $p = 0.9516$; combining small frequency value for bupivacaine with articaine, chi-square = 0.42, 3 df, $p = 0.9361$).

TABLE II

Comparison Of Respondents With Non-Respondents

Local Anesthetic	Per cent distribution	
	respondents	non-respondents
Articaine	37.84	38.72
Bupivacaine	2.08	0.07
Lidocaine	26.35	31.52
Mepivacaine	13.49	7.41
Prilocaine	20.23	22.28

This table illustrates the percentage use of local anesthetics among respondents ($n = 2,426$) compared with a sample of non-respondents ($n = 31$). A statistically significant difference could not be demonstrated (for all groups, chi-square = 5.925, 4 df, $p = 0.2048$; combining small frequency value for bupivacaine with articaine, chi-square = 3.994, 3 df, $p = 0.2621$).

contribution to the profession's knowledge base.

A number of methods could have been used to collect data on the annual use of local anesthetic in dentistry. Hypothetically, each dentist could have been asked to review the dental records of each patient that he or she treated in the past year. This method would have been accurate, provided the exact number of injections and the type of local anesthetic used were clearly recorded for each patient, and that each dentist had time to read the chart of every patient seen in the past year. The time factor alone would make this method exceedingly impractical, and would most likely have resulted in an ex-

tremely low response rate, thereby negating any advantages of such a thorough review.

The same information could have been estimated indirectly by determining the number of cartridges purchased by each dental facility in one year. It's considerably easier to review ordering records or invoices than individual patient charts, and it's likely that this approach would have resulted in an improved response rate. However, it assumes that each cartridge purchased by the dentist was subsequently administered to a patient. As cartridges may be disposed of prior to use — if the expiry date has passed, for example — this method would likely over-

THE BEST BOND JUST GOT BETTER

GREATER STRENGTH

OptiBond resin and glass-filled particles infuse the tubules and reinforce the calcium deficient dentin for micromechanical retention and outstanding adhesion.

BONDS TO FRESH AMALGAM

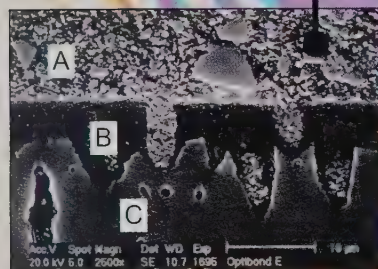
OptiBond is clinically documented to provide both structural lining and adhesion under any amalgam restoration.

NOW ELIMINATES THE NEED FOR CAVITY LINERS

OptiBond is tested for use as an Adhesive/Liner. It replaces calcium hydroxide and glass ionomers to simplify your procedures.

NOW FOR PULP CAPPING

In a recent study, OptiBond was effective in stimulating secondary dentin formation. OptiBond helps to minimize hypersensitivity due to encroaching pulp activity.



SEM magnified 2500x.
A. Optibond Dual Cure
B. Interdiffusion Zone
C. Deep Unaltered Dentin

OptiBond™

STRUCTURAL BONDING

DENTIN BONDING SYSTEM



OPTIBOND IS CLINICALLY PROVEN...a Structural Adhesive/Liner that develops a reinforced link between tooth and restoration for great strength and less post-op sensitivity. MULTI-PURPOSE...bonds to amalgam, enamel, moist dentin, etched dentin, porcelain, metals and composites. Perfect for indirect and direct-placed restorations. OPTIMUM SECURITY...light or chemical cure. Provides fluoride release. Filled technology minimizes polymerization shrinkage. Flows to fill surface irregularities. OPTIMAL ESTHETICS...fills class V margins with a durable layer that finishes to a smooth blended bondline. OPTIMAL HANDLING...easy to place and control for a difference you can feel. For complete information, please contact your Kerr dealer or call: 1-800-KERR-123.

KERR
A SUBSIDIARY OF
SYBRON

DENTAL SPECIALTIES, INC.

The difference is the experience.

**TABLE III****Distribution Of Responses Classified By Speciality**

Category	Total Number	Number Returned	Percentage Returned
All licensed dentists	6271	2,426	38.7
Endodontists	70	24	34.3
Oral and maxillofacial surgery	151	89	58.9
Oral pathologists	10	7	70.0
Oral radiologists	9	1	11.1
Orthodontists	250	53	21.2
Pediatric dentists	83	35	42.2
Periodontists	134	41	30.6
Prosthodontists	55	18	32.7
Public health dentists	34	14	41.2
Total of specialists	796	282	35.4
Non-specialists	5,475	2,144	39.2

This table illustrates the distribution of responses based on dental speciality. The total numbers were determined from the 1993 Royal College of Dental Surgeons of Ontario listings.

TABLE IV**Survey Results: Classified By Formulation**

Local Anesthetic Formulation	Number of Cartridges	Percentage
Articaine 4% with epinephrine 1:100,000	806,306	17.93
Articaine 4% with epinephrine 1:200,000	895,480	19.91
Bupivacaine 0.5% with epinephrine 1:200,000	93,496	2.08
Lidocaine 2% with epinephrine 1:100,000	1,051,344	23.38
Lidocaine 2% with epinephrine 1:50,000	133,459	2.97
Mepivacaine 2% with levonordefrin 1:20,000	285,626	6.35
Mepivacaine 2% with epinephrine 1:100,000	38,270	0.85
Mepivacaine 3% plain	283,102	6.29
Prilocaine 4% with epinephrine 1:200,000	735,867	16.36
Prilocaine 4% plain	174,266	3.87
Other	37	0.00

This table provides the raw data of the 2,426 responses. The number of cartridges represent those used only by the dentists who replied. To project the total use in Ontario, these numbers should be multiplied by the inverse of the response rate.

estimate actual usage. It is reasonable to assume, however, that this factor would represent a marginal effect. This indirect means of obtaining information was therefore chosen for this survey.

The survey results provide an indication of the extent of local anesthetic use by dentists in the province of Ontario in 1993. Based on these data, it seems reasonable to estimate that Ontario dentists used

more than 11,000,000 cartridges. This takes into account the fact that not every cartridge purchased by a dental office was ultimately administered to a patient. The exact number of cartridges used in

1993, based on an extrapolation of the survey data, was 11,625,010. In effect, the authors' estimate allows for up to 625,010 of the local anesthetic cartridges purchased by Ontario dentists in 1993 to have been discarded, which is equivalent to an average of about 100 cartridges per dentist. Intuitively, it seems unlikely that each dentist would discard this much anesthetic annually. This would indicate that there is a legitimate basis for the authors' belief that over 11 million cartridges were used in 1993.

The low response rate of Ontario orthodontists (21.2 per cent) may also have affected the accuracy of extrapolated results. Orthodontists, because of the nature of their specialty, typically do not use local anesthetics or use them minimally. As such, their under-representation in this survey would result in a potential over-estimation of annual local anesthetic use. However, even if the response rate of Ontario orthodontists equalled the overall survey response rate of 38.7 per cent, and all the additional responses stated zero use of local anesthetics, the additional data would not affect the conclusions of this study. A response rate of 38.7 per cent for orthodontists would have required an additional 42 orthodontists to reply to the survey. Extrapolation of the anticipated data would have indicated that 11,427,177 cartridges were used.

Another assumption is that respondents and non-respondents have the same usage patterns.^{19,20} If the average of 1,674 cartridges from our non-respondent subgroup ($n = 31$) was applied to the 3,845 dentists who also did not respond, this would project a total of 10,933,783 cartridges for all dentists, slightly less than our estimate. If the same approach is applied to the last 500 respondents — who may have patterns similar to the non-respondents¹⁹ — this estimate would increase to 11,283,678.

Tables I and II summarize the distribution of percentage response between the early and late respondents, as well as between responders and non-responders. The differences were not large

TABLE V**Survey Results: Distribution Of Local Anesthetic Alone Projected For All Dentists In Ontario**

Local Anesthetic	Number of Cartridges	Percentage
Articaine	4,398,970	37.84
Bupivacaine	241,679	2.08
Lidocaine	3,062,613	26.35
Mepivacaine	1,569,037	13.49
Prilocaine	2,352,615	20.23

This table illustrates the distribution of local anesthetics based on the drug itself, and projected for all dentists in Ontario. The projection is based on multiplying the total number of cartridges by the inverse of the response rate.

TABLE VI**Survey Results: Distribution Of Vasoconstrictor Use Projected For All Dentists In Ontario**

Vasoconstrictor	Number of Cartridges	Percentage
Epinephrine 1:50,000	344,980	2.97
Epinephrine 1:100,000	4,900,789	42.16
Epinephrine 1:200,000	4,458,570	38.35
Levonordefrine 1:20,000	738,318	6.35
None	1,184,309	10.16

This table illustrates the distribution of vasoconstrictors projected for all dentists in Ontario. The projection is based on multiplying the total number of cartridges by the inverse of the response rate.

enough to be statistically significant. This is not surprising since, intuitively, no difference in local anesthetic use is expected between respondents and non-respondents. Therefore, there is a basis to project these data to represent all dentists in Ontario.

Differences in the types of local anesthetics used were noted. Bupivacaine is the only long-acting local anesthetic available in Ontario, and therefore represents a unique category. At the other end of the spectrum, formulations without vasoconstrictor are the shortest-acting local anesthetic agents, and represent 10 per cent of the total use. In addition to being indicated for short-duration procedures, these agents are also the formulation of choice when vasoconstrictors are contraindicated due to systemic conditions,

such as cardiovascular disease or drug interactions.

The most commonly-used local anesthetics have an intermediate duration of action. As shown in **Tables IV and V**, differences in use are noted. Each of these drugs is efficacious and can therefore result in adequate neuronal blockade.¹⁰⁻¹² The differences in use noted in this study would appear to reflect other factors, which are more difficult to document. The literature does not support any particular advantage of using any one of these drugs over another.²¹⁻²⁵ It is possible that the dentist's selection of a local anesthetic formulation may reflect a desire to use a specific concentration of epinephrine, such as 1:200,000 compared with 1:100,000.

Differences were also noted in the use of vasoconstrictors. Vasoconstricting agents, namely epi-

nephrine and levonordefrin, are added to local anesthetic formulations to increase the depth and duration of local anesthesia, reduce the likelihood of systemic toxicity by decreasing uptake by the blood vessels, and to provide localized hemostasis. In the past, it was commonly believed that the amount of epinephrine administered in local anesthetic formulations was far less than the amount that can be released endogenously by the adrenal medulla during times of stress, particularly stress induced by pain. Recent evidence now implies that exogenous epinephrine may not be as innocuous as was first thought,²⁶ although there are conflicting reports as to its clinical significance.²⁷ Current recommendations are consistent with the judicious use of epinephrine or levonordefrin, limiting its dose where there are specific contraindications.¹²⁻¹⁴

The use of 1:50,000 epinephrine, which may be indicated where significant hemostasis is required, was relatively minor. Interestingly, the advantage of high-dose epinephrine for hemostasis is equivocal, as there may be a rebound vasodilatation that could increase postoperative blood loss.^{10,28} As shown in **Table VI**, the use of 1:100,000 epinephrine remains slightly more common than the use of 1:200,000. However, if the recommendations for reduced epinephrine continue, one may expect a gradual increase in the use of 1:200,000 epinephrine over time. Levonordefrin, at 1:20,000, is considered approximately equipotent to epinephrine at 1:100,000.

This survey has provided an estimation of the annual use of local anesthetics by dentists in Ontario. From this data base, we should be able to determine the relative significance of the reports of adverse effects. Given the estimate of more than 11,000,000 annual administrations of local anesthetics, even the most remotely possible adverse reactions may be found. It is notable that such reports are rare. This may indirectly support the concept that the local anesthetics and vasoconstrictors used in dentistry are safe. ■

Acknowledgements: The authors wish to thank the dentists who took the time to do the calculations and reply to the survey; the Royal College of Dental Surgeons of Ontario for their assistance in printing and mailing the surveys to the dentists of Ontario; Dr. Adel Csima for her assistance with the statistical analysis; and Dr. Mel Gardner for his advice.

Dr. Daniel A. Haas is an associate professor in the department of anesthesia, faculty of dentistry, the department of pharmacology, faculty of medicine, University of Toronto; and the department of dentistry, Sunnybrook Health Science Centre.

Dr. D. Lennon is a consultant with the professional liability program of the Royal College of Dental Surgeons of Ontario.

Reprint requests to: Dr. D. Haas, Department of Anesthesia, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ont. M5G 1G6.

References

1. Cawson, R.A., Curson, I. and Whittington, D.R. The hazards of dental local anesthetics. *Br Dent J* 154:253-258, 1983.
2. Tomazzoli-Gerosa, L., Marchihni, G. and Monaco, A. Amaurosis and atrophy of the optic nerve: an unusual complication of mandibular-nerve anesthesia. *Ann Ophthalmol* 20:170-174, 1988.
3. Fish, L.R., McIntire, D.N., and Johnson, L. Temporary paralysis of cranial nerves III, IV, and VI after a Gow-Gates injection. *JADA* 119:127-130, 1989.
4. Okada, Y., Suzuki, H. and Ishiyama, I. Fatal subarachnoid haemorrhage associated with dental local anesthesia. *Aust Dent J* 34:323-325, 1989.
5. Hersh, E.V., Helpin M.L. and Evans, O.B. Local anesthetic mortality: report of case. *J Dent Child* 58:489-491, 1991.
6. Miles, P.G. Facial palsy in the dental surgery. Case report and review. *Aust Dent J* 37:262-266, 1992.
7. Moore, P.A. Preventing local anesthesia toxicity. *JADA* 123:60-64, 1992.
8. Fiset, L., Milgrom, P., Weinstein, P. et al. Psychophysiological responses to dental injections. *JADA* 111:578-583, 1985.
9. Bosco, D.A., Haas, D.A., Harrop, K. et al. An anaphylactoid reaction following local anesthesia: A case report. *Anesth Pain Control Dent* 2:87-93, 1993.
10. Malamed S. *Handbook of Local Anesthesia*. C.V. Mosby, 1990.
11. Yagiela J.A. Local anesthetics. In: *Pharmacology and Therapeutics for Dentistry*. E.A. Neidle and J.A. Yagiela, eds. C.V. Mosby, 1989.
12. Yagiela J.A. Local anesthetics. In: *Management of Pain and Anxiety in Dental Practice*. R.A. Dionne and J.C. Phero, eds. Elsevier, 1991.
13. Perusse, R., Goulet, J.P. and Turcotte, J.Y. Contraindications to vasoconstrictors in dentistry: Parts I to III. *Oral Surg Oral Med Oral Pathol* 74:679-697, 1992.
14. Sisk, A.L. Vasoconstrictors in local anesthesia in dentistry. *Anesth Prog* 39:187-193, 1992.
15. Kish L. *Survey Sampling*. John Wiley & Sons, 1965.
16. Woodward, C.A., Chambers, L.W. and Smith, K.D. *Guide to improved data collection in health and health care surveys*. Canadian Public Health Association, 1982.
17. Snedecor, G.W. and Cochran, W.G. *Statistical Methods*. 7th ed. Iowa State University Press, 1980.
18. Daniel, W.W. *Biostatistics: A foundation for analysis in the health sciences*. 3rd ed. John Wiley & Sons, 1983.
19. Siemiatycki, J. and Campbell, S. Non-response bias and early versus all responders in mail and telephone surveys. *Am J Epidemiol* 120:291-301, 1984.
20. Locker, D. and Grushka, M. Response trends and non-response bias in a mail survey of oral and facial pain. *J Public Health Dent* 48:20-25, 1988.
21. Donaldson, D., James-Perdok, L., Craig, B.J. et al. A comparison of Ultracaine DS (articaine HCl) and Citanest forte (prilocaine HCl) in maxillary infiltration and mandibular nerve block. *J Can Dent Assoc* 53:38-42, 1987.
22. Haas, D.A., Harper, D.G., Saso, M.A. et al. Comparison of articaine and prilocaine anesthesia by infiltration in maxillary and mandibular arches. *Anesth Prog* 37:230-237, 1990.
23. Strichartz, G.R. and Covino, B.G. Local Anesthetics. In: *Anesthesia*, Miller, R.D., ed., 3rd ed., New York, Churchill Livingstone, 1990.
24. Haas, D.A., Harper, D.G., Saso, M.A. et al. Lack of differential effect by Ultracaine (articaine) and Citanest (prilocaine) in infiltration anesthesia. *J Can Dent Assoc* 57:217-223, 1991.
25. Hersh, E.V. Local anesthetics in dentistry: clinical considerations, drug interaction and novel formulations. *Compendium* 8:1020-1029, 1993.
26. Troullos, E.S., Goldstein, D.S., Hargreaves, K.M. et al. Plasma epinephrine levels and cardiovascular response to high administered doses of epinephrine. *Anesth Prog* 34:10-13, 1987.
27. Davenport, R.E., Porcelli, R.J., Iacono, V.J. et al. Effects of anesthetics containing epinephrine on catecholamine levels during periodont. surgery. *J Periodontol* 61:553-558, 1990.
28. Sveen, K. Effect of the addition of a vasoconstrictor to local anesthetic solution of operative and post-operative bleeding, analgesia and wound healing. *Int J Oral Surg* 8:301-306, 1979.

ANESTHESIA



Maxillary Nerve Block: A Case Report and Review Of the Intraoral Technique

I.A. Nish, B.Sc., M.Sc., DDS

B.R. Pynn, B.Sc., M.Sc., DDS

H.I. Holmes, DDS, Dip. OMFS

E.R. Young, B.Sc., DDS, B.Sc.D., M.Sc., FADSA

ABSTRACT

Maxillary nerve blockade is not commonly used by general practitioners due to a lack of experience with the techniques involved and the fear of iatrogenic damage. Nevertheless, it represents an excellent method of producing profound anesthesia in the maxilla, with definite indications in selected instances. The anatomy and techniques associated with the maxillary block, as well as the indications, contraindications and complications are reviewed, and the use of the greater palatine foramen approach to treat a patient with a facial abscess is described.

Key Words: maxillary nerve, greater palatine approach, nerve block

SOMMAIRE

À cause d'un manque d'expérience et par crainte de dommages iatrogènes, les praticiens généraux procèdent peu souvent au blocage du nerf maxillaire. C'est pourtant un excellent moyen d'anesthésier profondément le maxillaire et, dans certains cas, il est bien indiqué. Dans cet article, on révisé l'anatomie et les techniques associées au blocage du nerf maxillaire ainsi que les indications, contre-indications et complications. De plus, on explique comment obtenir un plus grand trou palatin postérieur pour pouvoir

traiter un patient souffrant d'un abcès facial.

Mots clés: nerf maxillaire, approche palatine plus grande, blocage du nerf.

Introduction

The maxillary nerve (V₂) block is a technique for achieving anesthesia of the hemi-maxilla. It has the advantage of obviating — by an effective, single, more proximal block of the nerve trunk — the need for multiple buccal, labial, and palatal injections. However, many dentists lack confidence with respect to administering the maxillary block, as they are relatively unfamiliar with the anatomy of the region as it relates to this method.

The two intraoral techniques for administering the maxillary block are the greater palatine foramen (GPF) injection and the buccal or posterior, infraorbital or posterior tuberosity approach. An extraoral technique has also been described.^{1,2} The popularity of the buccal, pterygopalatine fossa approach has waned because of the associated risk of hematoma. The palatal approach is fundamentally different, however, as it bypasses the pterygoid plexus of veins and the posterior superior alveolar artery — the two common sources of hematoma formation in the pterygoid fossa region. To date, there have been no documented cases

of hematoma following a greater palatine canal approach.

Two compelling reasons to consider using the greater palatine foramen injection include a high rate of success and a low incidence of complications. The greater palatine canal approach was first documented by Mendel in 1917 and revived by Silverman in 1923.^{3,4} Various refinements to the technique were subsequently added by other workers.^{1,2,5} A more detailed review of this technique and the pertinent literature is presented. Its practical value is illustrated by the description of a clinical case in which local anesthesia was achieved, allowing an extraction to be performed in a patient who would otherwise have required a general anesthetic for definitive surgical intervention.

Case Report

A 48-year-old man presented to the Toronto Hospital Dental Clinic with a five-day history of left maxillary premolar pain and mild swelling in the buccal vestibule. Two days before this visit, he had been examined in a local emergency room and was given a prescription for analgesia and a seven-day course of ampicillin. However, the swelling had been slowly increasing in size and now included the soft tissues around the left eye (Fig. 1).

The patient's medical history was unremarkable. On examina-

JOURNAL

April/
Avril
1995
Vol. 61
No. 4

tion, he was alert, oriented and in no apparent distress. He had a slightly elevated oral temperature, a pulse of 80 bpm, and a respiratory rate of 18/min. There was moderate trismus, and the cheek and lower eyelid were extremely tender to palpation. Ophthalmic examination revealed a normal range of eye movements, pupils that were equal and reactive to light, and accommodation with no diplopia. Intraoral examination demonstrated a mouth opening of 30 mm, a large, pointing, fluctuant buccal vestibule, and a carious tooth (#25).

Laboratory findings included an elevated white blood cell count (9.000/ul), but all remaining values were within normal limits. Radiographically, there was a periapical radiolucency associated with the carious tooth as well as several other carious teeth.

Local anesthesia was achieved via V₂ block using the GPF approach, and the carious tooth was surgically extracted. The infection was incised and drained, and specimens were sent for culture and sensitivity as well as for gram staining. A one-quarter-inch Penrose drain was placed in the incision site, and the patient was discharged home with a prescription for clindamycin and a follow-up appointment for the next day. His progress was uneventful, with pain and swelling subsiding within one week.

Indications

The V₂ block is considered in cases involving anesthesia of an entire quadrant of maxillary teeth, associated bone and soft tissue to allow exodontia, restorative dentistry, or periodontal therapy. It is also useful when the extent of buccal odontogenic infection contraindicates infiltration anesthesia. In addition, this technique is used effectively in sinus and endodontic procedures, in cases of trauma to the maxilla, and in the diagnosis and treatment of chronic oral and maxillofacial pain syndromes.

Contraindications

The only absolute contraindication to the V₂ block is an infection in the region of the palatal for-



Fig. 1: Clinical presentation of patient with left infraorbital swelling. Note the periorbital edema occluding the eye and erythema associated with the swelling.

men where there is a risk of spreading the infection into the pterygopalatine fossa. The presence of a systemic coagulopathy may be only a relative contraindication.

Anatomy

The success of any local anesthetic technique depends on a thorough and sound knowledge of the anatomy of the area to be injected and anesthetized. The second division of the trigeminal nerve arises from the gasserian ganglion in the middle cranial fossa, and exits the skull via the foramen rotundum. The nerve then traverses the superior aspect of the pterygopalatine fossa, where it divides into three major branches (**Fig. 2**). This is the only site where the nerve trunk is devoid of bony protection, and it is here that local anesthetic can be deposited to effect regional anesthesia. The three divisions and their terminal sensory branches are (**Fig. 3**):

1. *Pterygopalatine*: nasal; nasopalatine; greater palatine; lesser palatine.
2. *Infraorbital*: posterior superior alveolar; middle superior alveolar (if present); anterior superior alveolar; maxillary sinus; superior labial; lateral nasal; inferior palpebral.

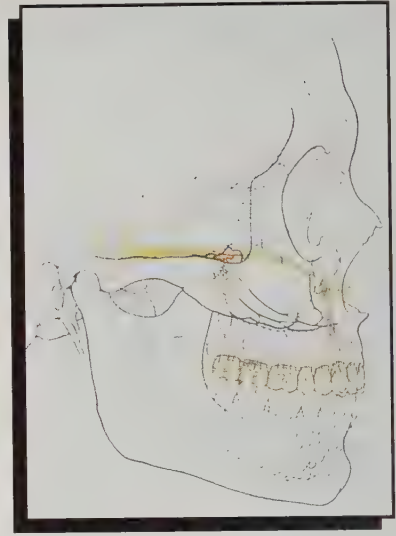


Fig. 2: Distribution of the second branch of the trigeminal nerve.

3. *Zygomatic*: nerve to the lacrimal gland (parasympathetic fibres — secretomotor from the sphenopalatine ganglion); sensory to the malar eminence (exits the zygomatico-orbital foramen).

The greater palatine foramen is always found in the same sagittal plane anterior to the pterygoid hamulus,⁶ in the palatal crevice formed by the junction of the horizontal hard palate and the vertical palatal alveolar bone distal to the second maxillary molar. Malamed and Trieger,⁶ studying 204 western skulls, found that almost 40 per cent of the greater palatal foramina were located between the middle of the maxillary second molar and the interproximal space between the second and third molars; while 51 per cent were situated between the latter site and the mid-portion of the third molar. The GPF was never located anterior to the middle of the second molar. In this same study, 98 per cent of the canals were patent, permitting the passage of a 25-gauge needle without resistance. In other studies, patency rates have varied from 85 per cent to 94 per cent.⁷⁻⁹

The range of optimal needle insertion angle, formed by the long axis of the needle and the horizontal plane of the hard palate, was 20 to 70 degrees. Wong and Sved⁵ recommended a needle to maxil-

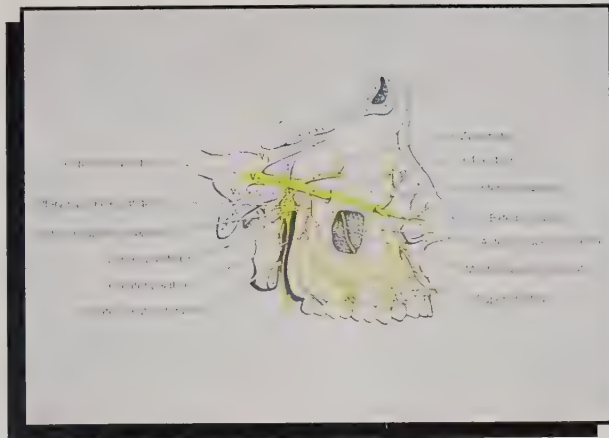


Fig. 3: Detailed illustration of the three principal divisions of V₂ and their terminal sensory branches.

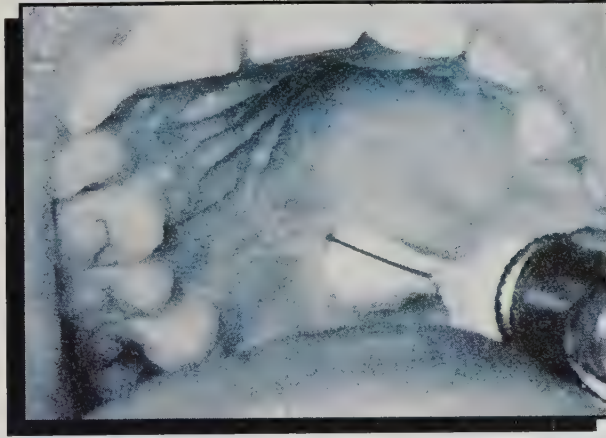


Fig. 4: Intraoral view demonstrating optimal needle angulation for the GPF access. The cotton swab is used to apply topical anesthetic and pressure anesthesia as well as assist in localization of the GPF.

lary occlusal plane angle of 60 degrees, and a lateral needle angulation of five to eight degrees from the sagittal plane. Malamed & Trieger⁶ reported that 75 per cent of the skulls had an optimal penetration angle between 37 and 57 degrees (**Fig. 4**).

The position of the maxillary nerve in the pterygopalatine fossa has been found to correlate well with both the distance between the lower border of the infraorbital foramen and the alveolar crest between the maxillary bicusps, and the vertical height of the orbit.^{1,6,11} Some authors suggest that this measurement should be marked on the needle (using a piece of sterile rubber dam or Penrose drain), and that the needle should not be advanced beyond this point.^{6,10} This height varied from 24 to 44 mm, with an average distance of 32 mm.^{6,11}

Measurements of the GPF from the posterior hard palate showed variation in the range of 3.0 to 12 mm, with the average distance being 7.0 mm.⁶ Greater palatine foramen localization can be difficult in the absence of dental references. For this reason, in the molar edentulous patient Mercuri¹⁰ recommends using the border marked by a color change between the soft palate (dark red with a yellowish hue) and hard palate (pale with a greyish tinge). The average distance from the tip of the hamular process to the middle of the GPF was exactly 12 mm.⁶

Techniques

1. Extraoral Approach^{1,2,14}

The extraoral approach to V₂ blockade is made either by way of the sigmoid notch of the mandible or anterior to its coronoid process. Its use is indicated where the intraoral approach is contraindicated, such as infection at the site of needle insertion or severe trismus.

The technique involves palpating the zygomatic process to locate the midpoint of the depression on its lower border. Local analgesia is provided by infiltration at the site. A 22-gauge, three-inch (75 mm) needle is used, with a sterile marker indicating a depth of two inches (50 mm). Needle insertion is below the zygomatic process at right angles to the skin, and it is advanced with a 30-degree anterior angulation and a five-degree superior angulation (Stebbins and Burch, 1961). The needle should strike the lateral pterygoid plate of the sphenoid bone at the approximate depth of two inches. It is then redirected a few degrees anteriorly, and inserted an additional one-quarter-inch to bring it into the pterygopalatine fossa.

Because of the high vascularity of the area, aspiration should always be practised. A total of 2.0 to 3.0 mL of local anesthesia solution should then be deposited slowly.

2. Intraoral Buccal Approach^{1,2,12,14}

A 25-gauge, 1 3/8-inch needle can be used for this injection, which is begun at the mucobuccal fold just posterior to the last maxillary molar. The intraoral buccal approach is particularly useful when infection proceeds through the palatal route rather than the buccal route. The needle is slowly advanced superiorly, medially and posteriorly, approximately 30 degrees to the vertical or sagittal plane. This keeps the needle close to the zygomatic and infratemporal surfaces of the maxilla to avoid the pterygoid plexus of veins, and consequent hematoma formation. Following careful aspiration, 2.0 mL of solution is slowly injected.

3. Greater Palatine Foramen Approach^{6,8,9-13}

The patient is seated in a semi-supine position in the dental chair, with his or her mouth opened widely. A mouth prop greatly facilitates access and visibility, and stabilizes the mandible in the open position. The greater palatine foramen can be palpated with a cotton applicator or mirror handle, applying pressure to the palatal mucosa at the junction of the hard palate and the alveolus. Alternately, the hamular process can be palpated with a fingertip to orient the proper sagittal plane. The GPF will most often be located between the middle of the second molar and the

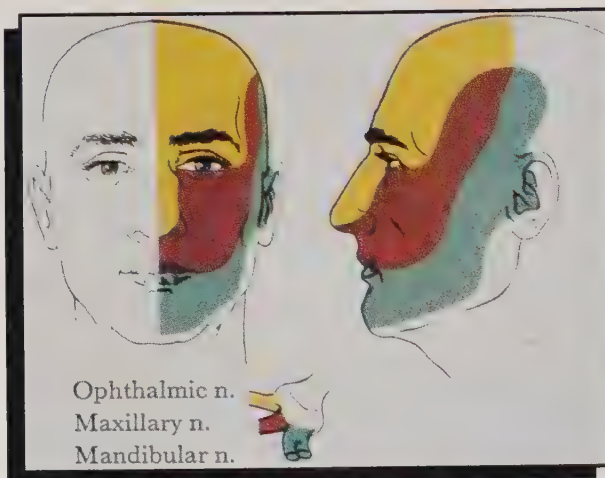


Fig. 5: Areas of cutaneous anesthesia resulting from blockade of the three divisions of the trigeminal nerve.

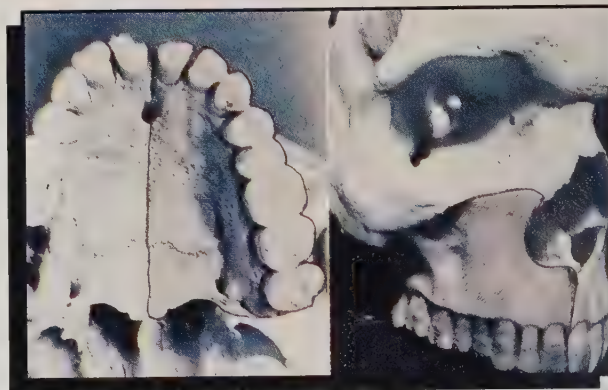


Fig. 6: Intraoral view of the hard and soft tissue areas anesthetized by V₂ blockade.

middle of the third molar, 7.0 mm anterior to the end of the hard palate or 12 mm from the tip of the hamular process of the pterygoid.

A cotton swab is then used to apply topical and pressure anesthesia (**Fig. 4**). A dental aspirating syringe and 25-gauge long needle (32 mm length) is gently introduced into the palatal mucosa at an angle of approximately 45 degrees to the long axis of the hard palate. Mercuri suggests a needle bent to a 30 degree angle 3.0 mm from the hub to facilitate entering the GPF. The needle is advanced superiorly and posteriorly until it has been inserted 32 mm. If resistance is encountered, the dentist should withdraw the needle 1.0 mm, change the angle slightly, and advance it again.

Aspiration is performed prior to the injection of local anesthetic. The two types of positive aspirations include blood, indicating intravascular location, and air, indicating that the needle has penetrated the nasopharynx. Following negative aspiration, anesthetic solution is deposited slowly with the aim of flooding the pterygopalatine fossa. The patient may experience a sensation of pressure behind the maxilla on the side of injection at this point. Several authors typically injected 1.8 mL of local anesthetic solution,^{6,10} while others state that 4.4 mL of solution is required for good anesthesia.^{5,8}

Onset of palatal anesthesia is almost immediate, with profound

anesthesia developing within five to seven minutes. Occasionally, it is difficult to achieve profound anesthesia on the labial of the incisor teeth. Success is indicated by numbness over the terminal branches of the maxillary nerve (lower eyelid, upper lip, cheek and side of nose) (**Figs. 5 and 6**).

Complications

The few complications reported for V₂ blockade are the same irrespective of the approach. Sved et al⁸ examined the complication rate in 101 patients who were treated using maxillary nerve blockade via the GPF, and reported incidences of diplopia (35.6 per cent), strabismus (11.8 per cent), failure of regional anesthesia (10.9 per cent), ptosis (9.9 per cent) positive blood aspirations (7.9 per cent) and neural trauma (one per cent).

The most common complication was diplopia of the ipsilateral eye, which can be expected due to the intimate proximity of the maxillary nerve and inferior orbital fissure. Deposition of solution at the appropriate plane (level of foramen rotundum) will almost inevitably lead to the diffusion of local anesthetic into the orbit via the inferior orbital fissure, which is reflected in the high incidence of diplopia.

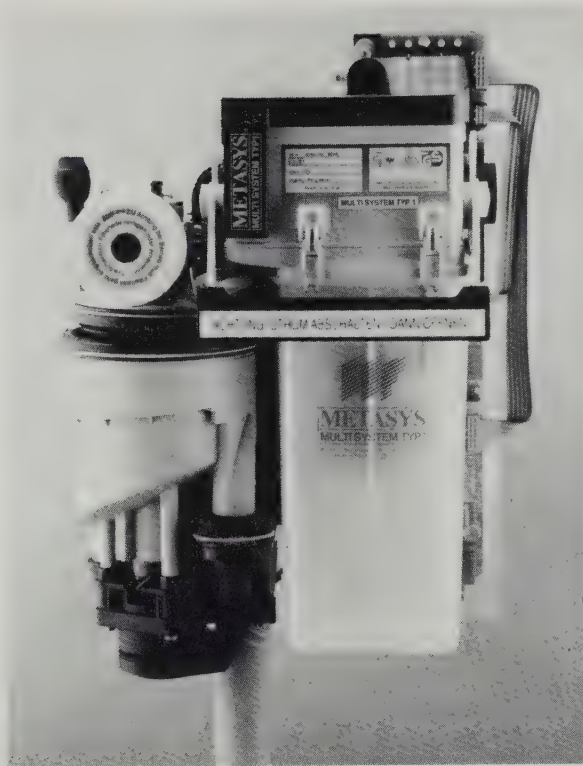
Diplopia results from anesthesia of the orbital nerves (oculomotor, abducens and trochlear). The local anesthetic may block the proprioceptive fibres, resulting in strabis-

mus (loss of ability to coordinate eyes in synchrony). Ptosis (drooping of the upper eyelid) may also accompany diplopia. Dickson and Coates¹³ and Corbett and Helmore⁹ reported diplopia in 6.25 per cent and 6.3 per cent of cases, respectively. The increased incidence reported by Sved et al⁸ may partly be explained by their use of 4.4 mL of local anesthetic solution as compared to the 2.2 mL used by Corbett and Helmore. The resulting diplopia is transient in nature, and the patient requires reassurance of this fact. The patient's eye should be covered with an eye patch to prevent any corneal abrasion due to a slowed blink reflex, and he or she should be accompanied home by a responsible adult, since monoscopic vision is without depth perception. There are no reported cases of permanent diplopia or other visual disturbances following this anesthetic technique. In fact, diplopia should not be feared as a consequence of this technique, but rather viewed as a positive sign of profound anesthesia.

The failure to anesthetize an entire quadrant may be caused by several factors. Operator experience plays a significant role, as it can be difficult to locate the GPF. However, a review of the relevant anatomy and practise with the technique will remedy this problem. The inability to negotiate the canal once the GPF has been located may be problematic. Several authors report constricted or tortu-

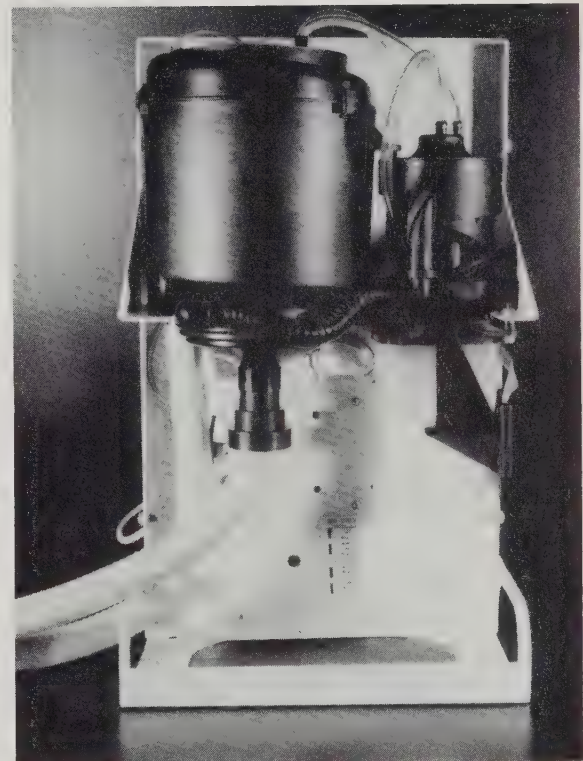
METASYS

AMALGAM SEPARATORS



The **METASYS MST1** chair-side amalgam separator is the most commonly used amalgam separator, meeting existing regulations anywhere in the world. The removal of particles (99.8%) down to one micron in size is achieved through the combination of sedimentation and centrifuge. The **METASYS MST1** chair-side amalgam separator is a true "At Source" waste control system, eliminating sedimentation and clogging of plumbing in the dental office.

The **METASYS Superior** amalgam separator uses -like the **METASYS MST1**- the principle of sedimentation and centrifuge to achieve the highest particle removal rate possible. The **METASYS Superior** amalgam separator is centrally located before the suction pump and designed to treat up to 6 liters of waste water per minute. One **METASYS Superior** amalgam separator is sufficient for most dental offices.



The **METASYS Recycling** package provides for a pre-paid mail away system for containers filled with amalgam waste. For more information, please contact your nearest dealer or **METASYS** at (905) 692-9073.

METASYS: THE UNION OF ECOLOGY AND TECHNOLOGY



ous canals in five per cent of patients, which may hinder negotiation of the entire length of the canal.^{6,8-10} Sved et al⁸ stated that penetration to within 15 mm of the "target" could still provide the required anesthesia. Every canal should be patent to some degree. The needle tip angulation may need to be adjusted if it impinges on the posterior wall of the canal. It is important not to force the needle at this point, as it may penetrate the paper-thin posterior aspect of the hard palate, depositing the local anesthetic solution in the nasopharynx. If this occurs, the patient will report a feeling of gurgling or a bitter taste in the back of the throat.

The incidence of positive aspirations is low (eight per cent) when compared to conventional mandibular block techniques (22 per cent).⁸ This may be related to the particular anatomy of the neurovascular bundle within the GPF and the technique of the GPF injection. As the needle is advanced within the canal, it passes in a parallel direction to the bundle, allowing little angulation for penetration. Another possible explanation may be that the tough perineural fibrous sheath around the bundle deflects the cutting edge of the needle. If an intravascular injection should occur, the patient will complain of discomfort as the artery goes into spasm. As well, the terminal branches of the artery may constrict, causing blanching of the skin on the ipsilateral side. The patient should be advised that the symptoms are transient, with no postoperative sequelae. However, they can be avoided by always using the proper aspiration technique prior to injecting the local anesthetic.

Although neural trauma may be an obvious concern for the operator when administering the V₂ block via the GPF, it has been recorded at a frequency of less than one per cent of the complication rate.⁸ The reasons for this may be similar to those given for the lack of intravascular injections, namely the parallel sheath within the canal and the toughness of the perineural sheath. If neural trauma

does occur, the patient may experience an electric shock. The needle should then be backed out 1.0 mm and the anesthetic deposited. This may result in partial anesthesia, due to the failure to achieve the target depth, and supplemental injections may be required.

A theoretical complication is needle breakage within the GPF itself. This may be avoided if basic anesthetic rules and techniques are adhered to. The needle should never be forced, should not be bent at the hub, and should never be buried to the hub in tissue.

Of the regional anesthesia failures reported (10.9 per cent), 5.9 per cent showed partial anesthesia and 4.9 per cent were complete failures.⁸ Supplemental injections may be required to complete the quadrant anesthesia for the incisors, due to cross innervation from the contralateral side. The claimed success rate of 89 per cent was consistent with Dickson and Coates (80 per cent),¹³ Corbett and Helmore (78 per cent),⁹ and Malamed and Trieger (90 per cent).⁶ By way of comparison, success rates for the inferior alveolar nerve block are 79 per cent for the Akinosi, 92-100 per cent for the Gow-Gates, and 65-85 per cent by the standard technique.⁸

Conclusion

The intraoral maxillary block via the GPF is an extremely useful technique for the general practitioner and specialist alike. With sound knowledge of the regional anatomy and practice, it represents an effective tool in a practitioner's armamentarium to achieve profound anesthesia for the hemimaxilla. ■

Dr. Nish is a resident in oral and maxillofacial surgery at the Toronto Hospital and faculty of dentistry, Toronto.

Dr. Pynn is a senior resident in oral and maxillofacial surgery at the Toronto Hospital and faculty of dentistry, Toronto.

Dr. Holmes is a staff member, division of oral and maxillofacial surgery, at the Toronto Hospital and senior tutor, faculty of dentistry, University of Toronto.

Dr. Young is an associate professor and head, department of anesthesia, faculty of dentistry, University of Toronto and The Wellesley Hospital, Toronto.

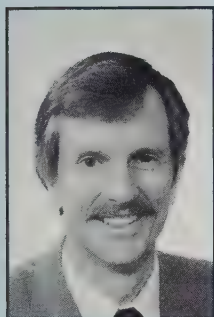
Reprint requests to: Dr. I.A. Nish, Division of Oral and Maxillofacial Surgery, The Toronto Hospital, 200 Elizabeth St., ESG-450, Toronto, Ont. M5G 2C4.

References

1. Stebbins, H.M. and Burch, R.J. Intraoral and extraoral injections. *J Oral Surg* 19:21-29, 1961.
2. Poore, T.E. and Carney, F.M.T. Maxillary nerve block: A useful technique. *J Oral Surg* 31:749-755, 1973.
3. Mendel, N. and Puterbaugh, P.G. *Conduction, infiltration and general anesthesia in dentistry*, 4th ed. Dental Items of Interest Publishing Co., New York, 1938, p. 140.
4. Silverman, S.I. Advances in block anesthesia including an original technique of injecting the superior maxillary nerve. *Dent Cosmos* 15:474-477, 1923.
5. Wong, J.D. and Sved, A.M. Maxillary nerve block anesthesia via greater palatine canal: A modified technique and case reports. *Aust Dent J* 36:15-21, 1991.
6. Malamed, S.F. and Trieger, N. Intraoral maxillary nerve block: An anatomical and clinical study. *Anesth Progress* 30:44-48, 1983.
7. Jorgensen, N.B. and Hayden Jr., J. *Sedation, local and general anesthesia in dentistry*, 3rd ed. Lea and Febiger, Philadelphia, 1980, pp. 58-62.
8. Sved, A.M., Wong, J.D., Donker, P. et al. Complications associated with maxillary nerve block via greater palatine canal. *Aust Dent J* 37:340-345, 1992.
9. Corbett, T.R. and Helmore, F.E. Block anesthesia of the maxillary nerve via the greater palatine foramen. *Proc 11th Aust Dent Congress*, Perth, WA, pp. 137-145, 1948.
10. Mercuri, L.G. Intraoral second division nerve block. *Oral Surg Oral Med Oral Pathol* 47:109-113, 1979.
11. Canter, S.R., Slavkin, H.C. and Canter, M.R. Anatomical study of pterygopalatine fossa and canal. *J Oral Surg* 22:36-41, 1964.
12. Trieger, N. New approaches to local anesthesia. In: *Pain Control*, 2nd ed. Mosby, Toronto, 1994, pp. 49-55.
13. Dickson, G.C. and Coates, R.H. Regional anesthesia of the maxillary nerve by the palatal method. *Br Dent J* 79:242-244, 1945.
14. Malamed, S.F. *Handbook of Local Anesthesia*, 2nd ed. C.V. Mosby Co., Toronto, 1986, pp. 146-182.



The Exhibit Hall: An Interactive Experience



Have you ever purchased a new product after reading a glossy, colour leaflet only to find out that the item did not measure up to its replica or that the claims made for it were either unrealistic or exaggerated? Catalogue shopping can be confusing, constricting and sometimes downright annoying

when the product you purchase does not match the catalogue description.

At the next CDA Convention the philosophy behind the Trade Exhibit is that promotional material can never replace hands-on experience and face to face contact. The Exhibit Hall is designed to show you what's new, let you handle materials and test new equipment, allow you to ask questions and give you an opportunity to shop comparatively.

When planning their participation, manufacturers often try to come out with new products "just in time for the meeting"; the launching of many new materials has taken place at major conventions. A visit to the Trade Exhibit will update you on all that's new in the dental field. You can spend a whole day in the lecture hall and learn all about new materials. You can also spend a few hours in the Exhibit Hall every day to produce similar results. There, you can manipulate, feel and experience all that is offered.

The Exhibit Hall is also the place you would want to visit with your associates and the members of your dental staff. At your leisure, you can talk about all the new products, try them and determine whether your office needs to replace some equipment. It is the perfect place to motivate experienced staff as well as train new personnel as you stop in front of the booths and discuss what's on the market; it is team learning at its best!

With its wide array of products, equipment and services displayed under one roof at the same time, the Trade Exhibit also gives you a chance to shop comparatively and buy wisely. To best illustrate this point, let's suppose you wish to buy a dental chair. By touring the Hall and visiting a few booths, you can try a number of different models, you can sit in the chairs, raise and lower them, etc. While everything is still fresh in your memory you can really compare and choose the perfect chair and thus avoid the disappointment and costly investments in a piece of equipment that does not entirely meet your needs.

Finally, the Exhibit Hall is not only a place to buy new products, it is a place to expand your knowledge about materials that you are already using. Should you have any questions or difficulties, you can discuss these with the trained personnel staffing the booths. For instance, if you find that a material you are using sets too fast, or that you are taking pictures that do not come out quite right, you are welcome to bring these issues to the salesperson who is most knowledgeable about the product. He/she may share with you that a similar problem has been experienced by other users and give you tips on how to avoid undesirable results in the future.

Promotional material can sway you in a certain direction or create biases for you, but at the Trade Exhibit **you** can be the critic. Plan to take time for a visit to the Exhibit Hall and make it an integral part of your participation in the CDA 1995 Convention.

David Rogers, D.D.S.
Organizing Committee
CDA 1995 Convention
Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

Tel.: 1-800-267-6354
Fax: (613) 523-3062



OTTAWA 1995

August 26 - 29

Pearls of Knowledge

**At the CDA
1995 Convention,
you will have the
opportunity to do
some valuable
pearl diving.**

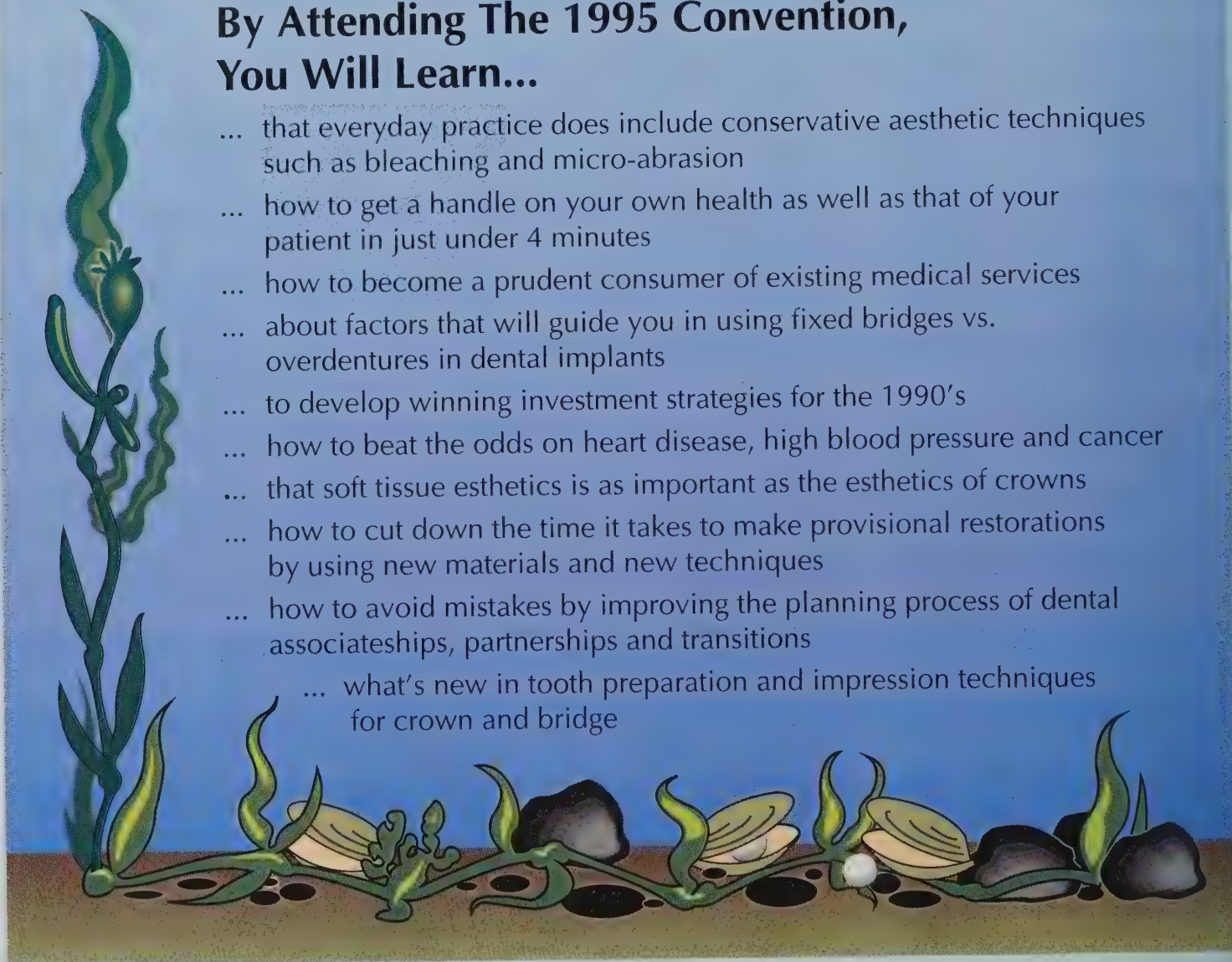
The scientific program is designed to encourage you to dive into an area of interest or expertise and surface with another pearl to add to your string of knowledge.

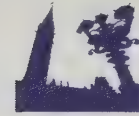
Through hands-on courses, limited attendance and general scientific lectures you will receive answers to many questions such as those below.

In addition, you will leave these courses and lectures equipped with better skills and the know-how to put something new into your practice.

By Attending The 1995 Convention, You Will Learn...

- ... that everyday practice does include conservative aesthetic techniques such as bleaching and micro-abrasion
- ... how to get a handle on your own health as well as that of your patient in just under 4 minutes
- ... how to become a prudent consumer of existing medical services
- ... about factors that will guide you in using fixed bridges vs. overdentures in dental implants
- ... to develop winning investment strategies for the 1990's
- ... how to beat the odds on heart disease, high blood pressure and cancer
- ... that soft tissue esthetics is as important as the esthetics of crowns
- ... how to cut down the time it takes to make provisional restorations by using new materials and new techniques
- ... how to avoid mistakes by improving the planning process of dental associateships, partnerships and transitions
- ... what's new in tooth preparation and impression techniques for crown and bridge

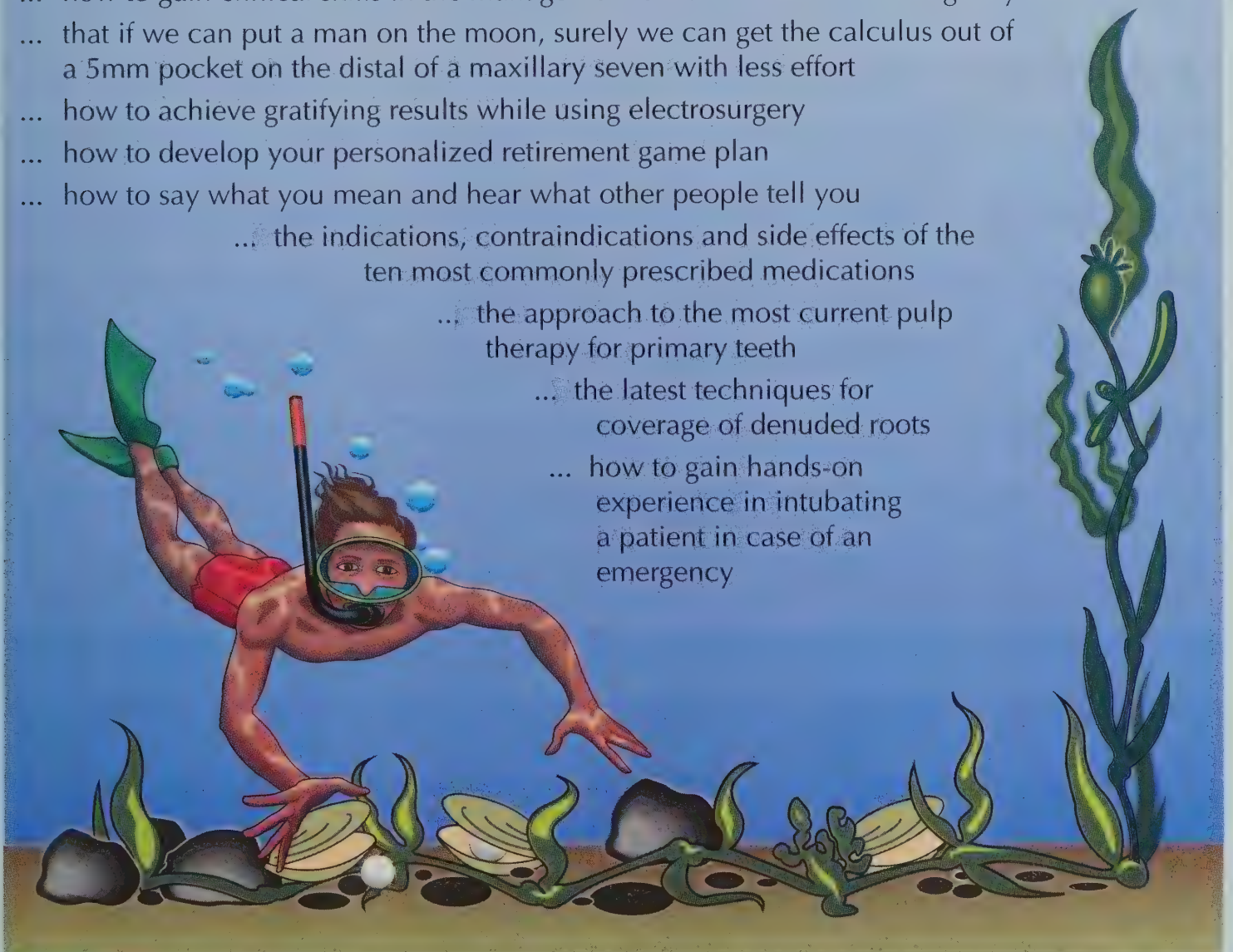




OTTAWA 1995

August 26 - 29

- ... tax-free income secrets
- ... that no fat and high fibre does not necessarily mean no taste and high boredom
- ... how to mix and handle the traditional and the most recent dental materials
- ... the basic principles of pharmacology as they apply to dental therapy
- ... about the most efficient periodontal surgical instruments
- ... practical solutions to overhead problems that are easily understood and implemented
- ... how to make the treatment of temporomandibular joint dysfunction a successful and satisfying part of your practice
- ... the most basic surgical skills
- ... how to resolve mysteries and conflicts so as to increase the fun and practicality of perio therapy for the hygienist and the general dentist
- ... how to explain implants to your patients in order to elicit an informed consent
- ... how to gain clinical skills in the management of various medical emergency situations
- ... that if we can put a man on the moon, surely we can get the calculus out of a 5mm pocket on the distal of a maxillary seven with less effort
- ... how to achieve gratifying results while using electrosurgery
- ... how to develop your personalized retirement game plan
- ... how to say what you mean and hear what other people tell you
- ... the indications, contraindications and side effects of the ten most commonly prescribed medications
- ... the approach to the most current pulp therapy for primary teeth
- ... the latest techniques for coverage of denuded roots
- ... how to gain hands-on experience in intubating a patient in case of an emergency





OTTAWA 1995

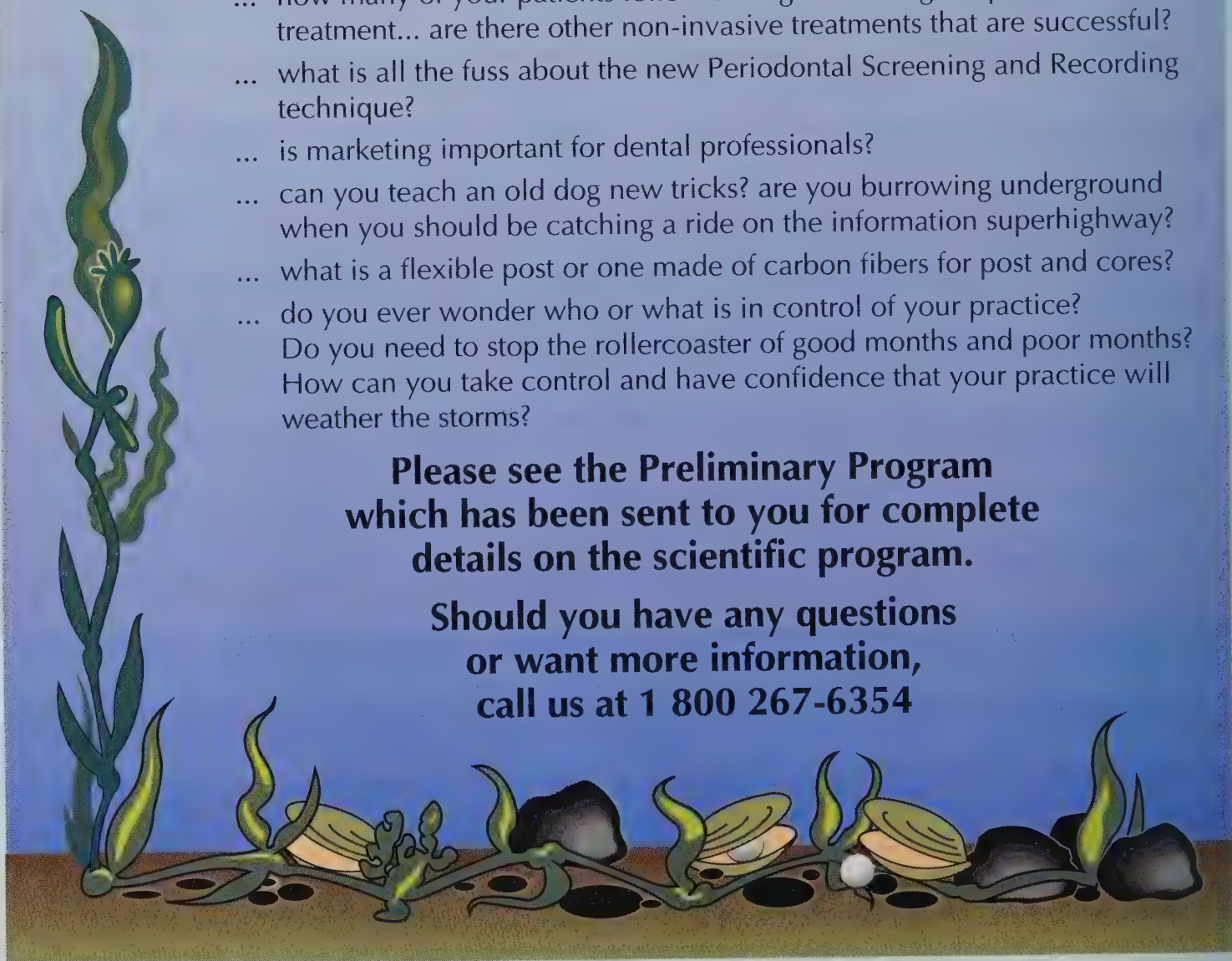
August 26 - 29

You Will Also Discover The Answers To These Questions ...

- ... what is a composipost and why should it be flexible?
- ... if a patient is interested in an implant but has no bone at that site, what adjunctive procedures can be done to provide bone?
- ... how do you get labor costs under control and get the most out of your dental practice?
- ... what are 6 techniques to obtain mandibular anesthesia?
- ... how do you use engine-driven rotary canal files?
- ... why do replanted teeth so frequently undergo resorption?
Could a change in the endodontic protocol alter this prognosis?
- ... how many of your patients follow through with surgical periodontal treatment... are there other non-invasive treatments that are successful?
- ... what is all the fuss about the new Periodontal Screening and Recording technique?
- ... is marketing important for dental professionals?
- ... can you teach an old dog new tricks? are you burrowing underground when you should be catching a ride on the information superhighway?
- ... what is a flexible post or one made of carbon fibers for post and cores?
- ... do you ever wonder who or what is in control of your practice?
Do you need to stop the rollercoaster of good months and poor months?
How can you take control and have confidence that your practice will weather the storms?

**Please see the Preliminary Program
which has been sent to you for complete
details on the scientific program.**

**Should you have any questions
or want more information,
call us at 1 800 267-6354**

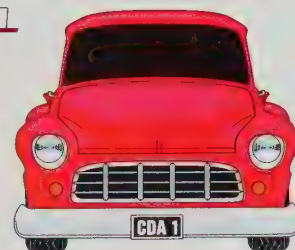


Social Program



OTTAWA 1995
August 26 - 29

MONDAY, AUGUST 28



Be prepared to rock around the clock at the PRESIDENT'S GALA!

7:00 p.m. - 8:00 p.m. — Cocktails
8:00 p.m. onward — Dinner & Dance

The 50's and 60's are back in full swing! The music will sweep you off your feet and take you on a journey to a time that no one has quite forgotten. The decor and atmosphere will be reminiscent of take-out burgers, rollerskates, hoola hoops, juke-box tunes and high school letter sweaters. Don't miss this opportunity to re-live an era of shared memories.

Make reservations by selecting the designated box for this evening on the registration form.

— TUESDAY, AUGUST 29 —

The Ottawa Dental Society
invites you to a
WINE TASTING RECEPTION.



This evening will be a change of pace as you enjoy the spirits of various regional vineyards in a relaxing atmosphere at the **National Gallery of Canada**. Come and discover new wines that are pleasing to your palate or savour the comforts of familiar vintages.

Purchase your ticket by checking off the appropriate section on your enrolment form.

Sunday, August 27
5:00 p.m. - 7:00 p.m.

ASH TEMPLE and
THE CDA CONVENTION
invite you to the ...
1995 OPENING
CEREMONY

Our evening of entertainment will take place in the **grand theatre of the National Arts Centre!** The NAC has been host to performances nationwide — it'll be a perfect place for you to enjoy the evening.

Come and experience two hours of fun and laughter as you are captivated by **COMEDIANS, CIRCUS PERFORMERS, ENTERTAINERS ...** and more! A great event for the entire family.

All Convention delegates are invited to attend the Opening Ceremony. Request your ticket on your enrolment form. **RESERVE NOW**, there are just over 2,000 seats available. First-come, first-served!

Don't miss the MEET & GREET!

Following the Opening Ceremony is a **MEET AND GREET** event to complete the evening.

Continuing in the carnival atmosphere you will enjoy a light meal amongst circus acts, games, magic and entertainment for everyone. Bring your family and friends.

Purchase your ticket by checking the appropriate box on your enrolment form.



CANADIAN DENTAL ASSOCIATION CONVENTION

Ottawa • August 26 - 29, 1995

GST Registration Number: R106845209

ONE FORM PER PERSON

PRE-REGISTRATION & HOTEL RESERVATION FORM • Please PRINT

To ensure that your requests are met — **please register early.** Advance registrations will be accepted until **July 21st, 1995** after which date forms will be returned to the sender. Each on-site registration will be subject to a \$30 administrative fee (GST included).

Check one: ☐ Dr. ☐ Mr. ☐ Ms.	Family Name	
	First Name	Sex: ☐ M ☐ F
	Street address	
City	Province	Postal Code
Office Telephone () ()	Home Telephone () ()	Fax () ()
CDA Membership Number		License Number

LIMITED ATTENDANCE LECTURES

Saturday, August 26th —

Terry Donovan — Aesthetic/Restorative Dentistry — All-day lecture
Dentist \$ 135 _____
Dental Staff (non-dentist) \$ 65 _____

Sunday, August 27th —

W. Charles Blair — Achieving Financial Independence — Half-day lecture
Dentist (7% GST included) \$ 95 _____
Spouse (7% GST included) \$ 40 _____

W. Charles Blair — Dental Practice Transition — Half-day lecture
Dentist (7% GST included) \$ 95 _____
Spouse (7% GST included) \$ 40 _____

Donald Rolfs — Periodontal Disease — All-day lecture
Dentist \$ 135 _____
Dental Hygienist \$ 65 _____

Alan Boghosian — Dental Materials — All-day lecture
Dentist \$ 135 _____
Dental Staff (non-dentist) \$ 65 _____

HANDS-ON COURSES

Saturday, August 26th —

Alan A. Boghosian — Dental Materials — Half-day hands-on course
Dental Assistant (limited to 50 participants) \$ 95 _____

James Grisdale — Scaling & Root Planing — Half-day hands-on course
Dentist / Dental Hygienist (limited to 40 participants) \$ 115 _____

John Cox — Implants
1 1/2 DAY COURSE: SATURDAY AND SUNDAY (AM)
Dentist (limited to 50 participants) \$ 295 _____

Sunday, August 27th —

Stanley Malamed — Emergency Medicine in Dentistry — All-day hands-on course
Dentist/Staff (limited to 30 participants) \$ 295 _____

Jeffrey A. Sherman — Electrosurgery — Half-day hands-on course
Dentist (limited to 40 participants) \$ 115 _____

Monday, August 28th —

Donald Rolfs — Periodontal Surgery — All-day hands-on course
Dentist (limited to 40 participants) \$ 295 _____

St. John Ambulance — CPR — All-day hands-on Certification course \$ 35 _____

Tuesday, August 29th —

Salam Sakal — Advanced Endodontics — All-day hands-on course
Dentist (limited to 40 participants) \$ 195 _____

GST is included in the Limited Attendance Practice Management courses. GST is not charged on Limited Attendance and Hands-on scientific courses. Lunch is included in all-day Limited Attendance and Hands-on courses (except for CPR).

CONVENTION

Choose only one delegate type. 1 registrant per form.

☐ **Dentist**
Member of CDA \$ Nil _____
Non-member of CDA (7% GST included) \$ 175 _____

☐ **Spouse** (7% GST included) \$ 98 _____

☐ **Dental Hygienist** (7% GST included) \$ 98 _____
Dental Hygienist (See note below)* \$ Nil _____

☐ **Dental Assistant** (7% GST included) \$ 98 _____
Dental Assistant (See note below)* \$ Nil _____

☐ **Office Personnel, Office Manager, Receptionist** (7% GST included) \$ 98 _____
Office Personnel, Office Manager, Receptionist (See note below)* \$ Nil _____

☐ **Dental Technician** (7% GST included) \$ 98 _____

☐ **Children (6-12 years)** Child's Age: _____
Monday program (7% GST included) \$ 48 _____
Tuesday program (7% GST included) \$ 48 _____

☐ **Student Dentist** \$ Nil _____
☐ **Student Hygienist** \$ Nil _____
☐ **Student Dental Assistant** \$ Nil _____

* Students must provide proof of full-time attendance.

***NOTE:** Every dentist enrolled for the Convention can register two (2) non-dentist staff members for the convention proper **FREE OF CHARGE**. The first or second non-dentist staff member to register *with* a dentist, choose "Registration Fees" Nil. Send Registration Form with that of the dentist.

SOCIAL EVENTS

- ☐ **Opening Ceremony** — Sunday, August 27th
(Subject to space availability — One ticket per Registration Form)
Will attend ☐ Yes ☐ No \$ Nil _____
- ☐ **Meet & Greet** — Sunday, August 27th
..... (7% GST included) \$ 50 _____
- ☐ **President's Gala** — 50's Dance — Monday, August 28th
..... (7% GST included) \$ 75 _____
- ☐ **Wine Tasting Reception** — Tuesday, August 29th
..... (7% GST included) \$ 25 _____
- ☐ **Golf Day** — Sunday, August 27th
..... (7% GST included) \$ 98 _____
- ☐ **Fun Run** — Tuesday, August 29th a.m.
..... (7% GST included) \$ 20 _____
- ☐ **Visits and Tours**
Monday tour and luncheon (7% GST included) \$ 50 _____
Tuesday tour and luncheon (7% GST included) \$ 50 _____

TOTAL \$ _____

Person/company
responsible for payment: _____

☐ I wish to pay the above total by credit card: ☐ MasterCard ☐ VISA

Card # _____ Expiry date _____

Name of Cardholder _____

SIGNATURE _____

☐ I enclose a cheque payable to the Canadian Dental Association.
Post-dated cheques will not be accepted.

CANCELLATION POLICY:

- Cancellation received, in writing, on or before July 21, 1995 — full refund
- Cancellation received, in writing, after July 21, 1995 — subject to a 25% administrative charge

NO REFUND AFTER AUGUST 18, 1995

INFORMATION ON REGISTRATION:

All participants registered for the Convention:

1. have access to all general lectures of the Convention proper
2. have access to the exhibit hall
3. have access to the opening ceremony
4. are entitled to register for the appropriate limited attendance and hands-on courses
5. are entitled to register for social programs, visits and tours

Spouses and children have access to the Opening Ceremony only if they register for one or more of the Convention's day programs. Spouses not registered for the Convention do not have access to the general lectures or to the exhibit hall.

MAKING YOUR AIRLINE RESERVATIONS

Special arrangements have been made with Air Canada to offer participants discounts on airfares.

To take advantage of this service, you must call Air Canada Convention Central at 1-800-361-7585 and quote event CV950931.

HOTEL RESERVATION

Type of Room:

☐ Single ☐ Double ☐ Twin ☐ Other (please specify) _____

Special Requests: _____

Indicate your choice of hotel* (by numbering the boxes):

- ☐ Westin Hotel (CDA Headquarters) \$128.00 single/double
☐ Château Laurier \$127.00 single/double
☐ Sheraton \$110.00 single/double
☐ Novotel \$99.00 single/double

* Prices do not include taxes.

Arrival Date: _____

Arrival Time: _____

Departure Date: _____

All changes and/or cancellations must be made **IN WRITING** through CDA Conventions. Fax to (613) 523-3062.

In order to reserve a room, a guarantee for the first night is essential. The guarantee will apply to the first night ONLY. To cancel your reservation advise CDA Conventions at least three (3) days prior to your projected arrival date.

CHEQUES WILL NOT BE ACCEPTED.

☐ MasterCard ☐ American Express ☐ VISA

Card # _____ Expiry date _____

Name of Cardholder _____

SIGNATURE _____

DEADLINE for Reservations: July 21, 1995

ACCOMMODATION

- ☐ I do not require accommodation
☐ Other arrangements have been made.

MAIL Pre-registration and Hotel Reservation Form with payment to:

1995 CDA Convention
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

OR FAX

(if paid by credit card): (613) 523-3062

Dentists, Hygienists, Assistants, Office Personnel
& Technicians registering by July 21, 1995
will be eligible to win two tickets **anywhere**
Air Canada flies in Europe and North America!
(Some restrictions apply.)



OTTAWA 1995
August 26 - 29

CDA 1995 Out-of-Country Seminars

Out-of-Country Seminars are not just another holiday! They are a chance for you to meet your colleagues in different parts of the world and exchange tips and ideas on the practice of dentistry. In addition to providing sightseeing at its best and first class accommodation in each destination, we will arrange for visits to dental clinics and private practices. You will meet members of the national dental association and have the opportunity to attend highly stimulating lectures.

In addition to the professional exchanges with your peers there are so many wonderful places and things you can experience through a CDA Out-of-Country seminar: the 83rd World Dental Congress in Hong Kong, a trip on the Orient Express, a visit of mainland Greece, a safari in Kenya, a swim in the hot spring pools of Pamukkale, Turkey or a sunset cruise along the Bosphorus Sea — to name but a few. Read below for more information on each destination. (Tour descriptions are only highlights.)

— FDI 1995 —



HONG KONG: Gateway to the Orient

The 83rd World Dental Congress, FDI 1995, will take place in bustling Hong Kong, universally recognised as the 'Gateway to the Orient'.

Jointly organized by the Hong Kong Dental Association and the World Dental Federation, the congress runs from October 23 to 27, 1995. The Congress itself will be held at the Hong Kong Convention and Exhibition Centre, on Hong Kong Island, overlooking Victoria Harbour.

If you attended FDI 1994 in Vancouver, you'll certainly want to repeat the experience. If not, then here is your chance to experience a meeting where dental professionals from around the world gather for the World Dental Con-

gress. We have put together a package which comprises airfare plus 5 nights accommodation (with breakfast) in Hong Kong. Take in the sights of this vibrant city and attend a great convention.

Hong Kong's exotic locale presents exciting opportunities for tours and visits. For those of you who want to combine FDI 1995 with a holiday in the Far East, we propose post-congress tours to Bali (October 26 - 30), China (October 26 - November 6), Bangkok and Singapore (October 26 - 31) and the Bunga Raya (Singapore, Malaysia and Bangkok — October 26 - November 5).



GREECE (June 17 - July 1, 1995)

Enjoy visiting the city of Athens with a tour of the Acropolis. From Athens embark on a classical tour of Greece with visits to ancient Corinth and its museum, Epidauros, Mycenae and Nauplia. In Olympia, visit the Sanctuary of Zeus, and the place where the Olympic Games had their origins. In Mykonos visit markets, beaches and enjoy fresh seafood and local entertainment. Get set also for a 4-day Greek Island Cruise with touring opportunities in Patmos, Kusadasi, Heraklion and the mountainous and beautiful Santorini.

KENYA (July 13 - 27, 1995)

Your safari begins at the Masai Mara Game Reserve, Kenya's richest reserve. Observe large free-roaming herds on the plains including the Big Five (Elephant, Lion, Leopard, Buffalo and Rhino). Also admire the Wildebeest, Gazelle and Zebra. At the Aberdare National Park visit The Ark, a unique lodge overlooking a large salt lick and waterhole that attracts wildlife both day and night. Enjoy the Samburu Reserve where the elephant, buffalo, cheetah, lion and leopard roam uninhibited. Be entertained by mischievous monkeys and watch sleeping crocodiles sun themselves at the river's edge.



For more information, contact Tourcan at 1-800-263-2995 or CDA Conventions at 1-800-267-6354.

ANESTHESIA



A 21 Year Retrospective Study Of Reports Of Paresthesia Following Local Anesthetic Administration

D.A. Haas, DDS, PhD, FRCD(C)

D. Lennon, BDS, MBA

ABSTRACT

A retrospective study of paresthesia following the injection of local anesthetic in dentistry was conducted by examining every report of paresthesia recorded by Ontario's Professional Liability Program from 1973 to 1993, inclusive. Only those cases where surgery was not conducted were considered in this study. The parameters examined included patient age and gender, needle gauge, site of injection, area affected, report of pain or any additional symptoms, and the type of local anesthetic used. From 1973 to 1993, there were 143 reports of paresthesia not associated with surgery. There were no significant differences found with respect to patient age, patient gender, or needle gauge. All reports involved anesthesia of the mandibular arch, with the tongue most frequently reported to be symptomatic, followed by the lip. Pain was reported in 22 per cent of the cases. Paresthesia was reported most often following the injection of articaine and prilocaïne. In 1993 alone, there were 14 reports of paresthesia not associated with surgery. This can be projected to an incidence of 1:785,000 injections. Articaine was administered in 10 of these cases or prilocaïne in the other four. The observed frequencies of paresthesia following the administration of articaine ($p < 0.002$) or prilocaïne ($p < 0.025$) were significantly greater than the expected

frequencies for these agents, based on the distribution of local anesthetic use in Ontario in 1993. These results are consistent with the suggestion that local anesthetic formulations may have the potential for mild neurotoxicity. Further studies are needed to investigate the mechanisms for this, and to determine whether similar findings would be found elsewhere.

Key Words: Local anesthetics, paresthesia, dentistry, articaine, prilocaïne.

SOMMAIRE

On a effectué une étude rétrospective de la paresthésie à la suite de l'injection d'un anesthésique local en dentisterie en dépouillant tous les rapports déposés de 1973 à 1993 dans le cadre du Professional Liability Program d'Ontario. Pour cette étude, on a retenu seulement les cas sans intervention chirurgicale. Les paramètres étudiés comprenaient l'âge et le sexe du patient, le diamètre de l'aiguille, le point d'injection, la partie affectée, les douleurs ou tout autre symptôme signalés, et la sorte d'anesthésique local administré. De 1973 à 1993, il y a eu 143 rapports de paresthésie non associée à une intervention chirurgicale. On n'a trouvé aucune différence importante touchant l'âge et le sexe des patients ou le diamètre des aiguilles. Dans tous les rapports, il était question d'une anesthésie de l'arc mandibulaire,

la langue présentant le plus souvent des symptômes, suivie de la lèvre. Des douleurs ont été signalées dans 22 p. cent des cas. La paresthésie a eu lieu le plus souvent après une injection d'articaine ou de prilocaïne. Pour la seule année 1993, il y a eu 14 rapports de paresthésie non associée à une intervention chirurgicale. Cette donnée peut se traduire par une incidence de 1:785 000 injections. Dans dix de ces cas, on a administré de l'articaine et dans les quatre autres, de la prilocaïne. Suivant la distribution des anesthésiques locaux administrés, les fréquences de paresthésie observées après l'administration de l'articaine ($p < 0.002$) ou de la prilocaïne ($p < 0.025$) étaient beaucoup plus élevées que ce qui est prévu pour ces agents. Ces résultats sont conformes à l'idée que les formules des anesthésiques locaux peuvent sans doute causer une faible neurotoxicité. Il faudra d'autres études pour comprendre les mécanismes en jeu et pour savoir si on ferait d'autres découvertes similaires.

Mots clés: anesthésique local, paresthésie, dentisterie, articaine, prilocaïne.

Introduction

Local anesthetics are accepted as essential drugs in modern dental practise. These drugs are considered to be very safe, overall, and the incidence of adverse reactions is as-

JOURNAL

April/
Avril
1995
Vol. 61
No. 4



sumed to be low. Adverse events may be categorized as being either systemic or localized to the site of the injection. Systemic complications can occur as a result of toxicity secondary to high circulating levels of the drug,¹ from allergy or allergic-like reactions,² or, most commonly, from psychogenic reactions induced by anxiety.^{3,4} Local complications may manifest in a number of different ways, including pain, trismus, hematoma, facial paralysis, visual abnormalities, needle breakage and paresthesia.⁴

Paresthesia may be defined as an abnormal sensation, such as a burning or tingling feeling.^{5,6} In dentistry, the term paresthesia is often also used to describe a persistent anesthesia or a painful neuropathy known as dysesthesia.⁷ Although a more accurate description of these neurologic effects is neuropathy, this article will employ the more commonly-used paresthesia as a general term to describe all forms of altered sensation. Specifically, this study included reports of lack of sensation, which may have been combined with the symptoms of drooling, speech impediment, taste loss, tingling, burning, and tongue biting.

Paresthesia is believed to be the result of a traumatic injury to the nerve. It most commonly occurs following third molar removal,^{5,8} but may also present after other intraoral surgeries⁹⁻¹¹ or local anesthetic injection.¹² The administration of local anesthetic contaminated by alcohol or sterilizing solution,¹³ or hemorrhage around or into the nerve sheath,⁴ are also putative causative factors. Most cases of paresthesia resolve within eight weeks.⁴ Although prolonged paresthesia can occur following the administration of a local anesthetic, this is considered to be a rare event.

One investigator has proposed that local anesthetic, by itself, is a causative factor for paresthesia.^{14,15} In general, however, local anesthetic is not usually considered in a list of putative causes. The potential role of local anesthetic neurotoxicity has been pursued only minimally in dentistry and medicine. However, studies and reviews of local anesthetic neuro-

REPORTED CASES OF PARESTHESIA Frequency by year: 1973 to 1993

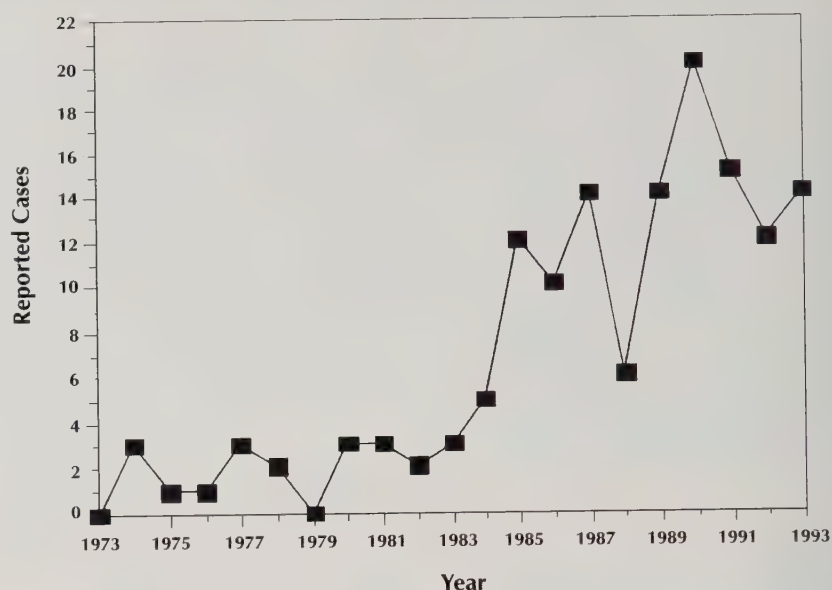


Fig. 1: The pattern of the numbers of reported cases of paresthesia in Ontario.

toxicity suggest that this may be possible.¹⁶⁻¹⁸

Paresthesia has been reported as the most common cause of litigious action against oral and maxillofacial surgeons.⁷ In fact, paresthesia can be very distressing for a patient, which, in turn, may incite them to initiate civil litigation against the dentist. The threat, or fear, of such action being taken by a patient may lead dentists to report incidents of paresthesia to those responsible for malpractice claims. Given this available source of data, any common, causative factor for paresthesia may be revealed by inspection of these reports.

The Professional Liability Program (PLP) of the Royal College of Dental Surgeons of Ontario (RCDS), initiated in 1973, administers a group malpractice insurance plan. This plan covers all dentists licensed by RCDS for claims arising in Ontario. Claims are confidential, and are handled outside of the disciplinary function of RCDS. Plan members are not required to report claims. However, a record of every claim reported since 1973 is maintained in the offices of the PLP.

The purpose of this study was to identify the existence of any common causative factors in the cases of paresthesia reported voluntarily

to the PLP since 1973. Given the lack of data on non-surgical paresthesia, the authors were particularly interested in examining the delayed regional reaction of prolonged paresthesia following the administration of a local anesthetic agent for a non-surgical procedure. This research represents a 21-year retrospective study of all reported cases of non-surgically induced paresthesia in dentistry in Ontario.

Method

Using the PLP data base, all cases of prolonged post-injection paresthesia reported in the province of Ontario from 1973 to 1993 were reviewed. This review was restricted to include only those cases where no surgical procedure was performed following the local anesthetic injection. All incidences of paresthesia were evaluated from historic reports and subjective descriptions of the affected areas.

The parameters examined included the patient's age and gender, needle gauge, site of injection, area affected, pain at the time of injection, any additional symptoms, and the type of local anesthetic administered.

Statistical analysis

The PLP data on local anesthetic agents were analyzed to test



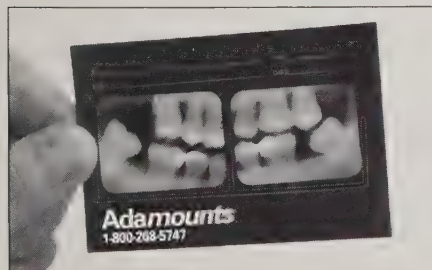
Over 1,500 masterpieces in X-ray mounts

Tour the extensive Adamounts gallery to view the finest in dental X-ray holders

Contemporary Ada Pocket Mounts

The ultimate in professional radiograph presentation

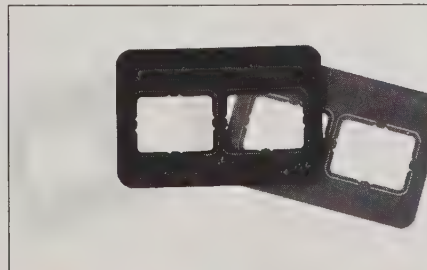
- Superior viewing area optimizes your diagnosis
- Opaque black format provides sharp contrast for your most accurate read
- Ultra-thin design assures compact storage and mailing
- Large insertion area eases loading



Classic Standard Adamounts

A tradition of excellence for 25 years

- Your widest collection of X-ray mounts
- Durable plastic wipes clean of fingerprints, stains and contaminants
- Surfaces do not discolour or become brittle with age
- Easy "snap-in" loading saves you time



1-800-268-5747

BLOCK DRUG COMPANY (CANADA) LIMITED

Adamounts

COMPARING INSURANCE POLICIES?



At CDSPI, we recognize that the Canadian Dentists' Insurance Program (CDIP) plans aren't your only insurance choices. Insurance agents and brokers approach dentists all the time, trying to sell their policies.

But reviewing policies from different insurance companies can be like comparing apples and oranges. With so many differences between one and another, you'd have to be an insurance expert to make a choice.

Fortunately, there is expert help available — for free. All you have to do is send any insurance policy or proposal you're given to CDSPI.

USE CDSPI'S INSURANCE REVIEW SERVICE

We'll forward the insurance policy or proposal to an independent reviewer. That reviewer will carefully evaluate and return it to you with a written report on its good — and not so good — points. At absolutely no cost to you.

We think you'll find this service a tremendous help in putting together your insurance program. And remember — should you receive a comparison against a CDIP plan — call us. Only CDSPI gives you all the true facts about CDIP.

So make your insurance planning easier, and let us take care of the apples and oranges.



**CANADIAN DENTAL
SERVICE PLANS INC.**

100 Consilium Place
Suite 710
Scarborough, Ontario
M1H 3G8



**CANADIAN
DENTAL
ASSOCIATION**

**L'ASSOCIATION
DENTAIRE
CANADIENNE**

1-800-561-9401 Toll-free

(416) 296-9401 Metro Toronto
Ext. 231

FINANCIAL PROGRAMS DESIGNED BY DENTISTS FOR DENTISTS

The Modular Dental Management System, EXCEL, is endorsed by CDSPI. For information contact Zadal Systems Group Inc. Telephone 1-800-663-1236

the null hypothesis that the drug itself had no effect on the incidence of paresthesia. Two statistical approaches were used. First, the chi-square test was used to compare the observed frequencies of paresthesia with the expected frequencies. P values less than 0.05 were judged to be significant.

Data on the distribution of use of local anesthetic in Ontario for 1993 are available.¹⁹ Under the null hypothesis, the expected frequencies of paresthesia were determined using the reported distribution of use of these drugs, which were then compared with the observed frequencies for 1993. The 21-year data implicated two drugs as possibly having an effect on paresthesia. Their contribution in 1993 was therefore analyzed separately.

There were 14 reports of paresthesia in 1993 alone, which resulted in several small expected values. The use of the chi-square test for small expected frequencies — less than five²⁰ or less than one²¹ per category — has been criticized by some researchers, as it provides a less accurate approximation than can be obtained using larger values. In this study, therefore, the exact binomial distribution was used to repeat the statistical test and confirm the conclusions of the chi-square test.

Results

In the 21-year period from 1973 to 1993, a total of 304 cases of paresthesia following surgery were reported, in addition to 143 cases where no surgical procedure was carried out. The numbers of non-surgical paresthesia cases reported annually in dentistry are illustrated in Fig. 1. It can be seen that the

TABLE I
Distribution By Age and Gender

Age	Female	Male	Not Stated
Under 20	0	4	
20-29	7	1	
30-39	8	8	
40-49	4	4	
50-59	5	3	
60-69	2	0	
70-79	0	1	
Unknown	46	47	3
Total (143)	72	68	3

number of reported cases remained low until 1984, and that there has been a gradual increase since that time. The actual incidence of paresthesia is more difficult to document. It may be estimated for 1993, however, as there are data estimating that over 11,000,000 local anesthetic injections were administered in Ontario in that year.¹⁹ As 14 cases of paresthesia following the administration of local anesthetic were reported in 1993 alone, the incidence of a non-surgical paresthesia is estimated to be approximately 1:785,000.

Age and Gender

As shown in Table I, the reported frequency of post-injection paresthesia was similar for females and males. As well, the frequency distribution by age suggests no causative relationship between this variable and the incidence of paresthesia.

Injection site

All reports of paresthesia involved the mandibular arches, with 69 cases described as left-sided paresthesia and 68 cases as right-sided paresthesia. In six of the incidents, the affected side was not documented. There was one report of bilateral paresthesia.

Areas Affected

The frequency at which various structures were affected is shown in Table II. As can be seen, the majority of reports involved the tongue, followed by the lower lip.

Occurrence Of Pain At the Time Of Injection

Reports of a stabbing or "electric shock" type of pain when the local anesthetic agent was injected were found in 31 of the 143 cases of paresthesia. The scope of this review did not permit an identification of incidences when a simi-

TABLE II
Location and Symptoms Of Paresthesia

Location	Frequency	Additional Symptoms					
		Droping	Speech Impediment	Taste Loss	Tingling	Burning	Tongue Biting
Lip	42	2	2	1	3	4	0
Tongue	92	3	9	23	10	11	6
Lip and tongue	9	1	0	2	1	2	2
Total	143	6	11	26	14	17	8



lar sensation was experienced by patients, but no paresthesia resulted.

Additional Symptoms

Table II illustrates that the most frequent additional symptom was a loss of taste. The majority of taste-loss cases were associated with paresthesia of the tongue only. When both the lip and tongue were involved, this symptom appeared in approximately the same proportion (two out of nine) as in the tongue-only cases (23 out of 92). In descending order, the next most frequently reported symptoms were burning sensations, tingling, speech impediment, tongue biting and drooling.

Needle Gauge

The needle gauge used was documented in only 38 of the 143 reported cases. As shown in Table III, all three of the needle gauges commonly used in dentistry, in both the long and short lengths, were reported. No data available on the relative frequency of use of the different gauges and lengths of needles. Therefore, the significance of this information cannot be determined.

Type Of Local Anesthetic Agent Administered

The local anesthetic agents used and the reported frequency of involvement of each agent in the occurrence of paresthesia are presented in Table IV. On several occasions more than one injection was administered at a given time, and in some cases different solutions were jointly administered. The number of administrations of local anesthetic agent reported, 149, is therefore greater than the number of cases reviewed, 143. In the majority of the cases, the standard amount of local anesthetic contained in one cartridge, 1.8 mL, was administered.

Over the 21 years of the study, the two most commonly reported local anesthetics when paresthesia occurred were articaine and prilocaine. In those cases where the drug was known ($n = 102$), articaine was reported at a frequency of 49.0 per cent, prilocaine at 42.2

TABLE III

Needle Distribution By Gauge and Length

Length	Gauge			
	25	27	30	Total
Long	9	17	2	28
Short	2	3	5	10
Total	11	20	7	38

TABLE IV

Frequency Distribution By Anesthetic Agent: 1973-1993

Anesthetic Agent	Frequency	Frequency %
Articaine	50	33.6
Bupivacaine	0	0
Lidocaine	5	3.4
Mepivacaine	4	2.7
Prilocaine	43	28.9
Unknown	47	31.5
Total	149	100

TABLE V

Frequency Distribution By Anesthetic Agent: 1993 Alone

Anesthetic Agent	Frequency %	Observed Frequency
Articaine	71.4	10
Bupivacaine	0	0
Lidocaine	0	0
Mepivacaine	0	0
Prilocaine	28.6	4
Total	100	14

per cent, lidocaine at 4.9 per cent, and mepivacaine at 3.9 per cent. There were no reports with bupivacaine.

The importance of the high reported frequencies of articaine and prilocaine are dependent on the relative distribution of use of these drugs in dentistry. As this information is available for Ontario in 1993,¹⁹ the cases of paresthesia reported to the PLP in 1993 were separated and are listed in Table V. In all 14 cases, only articaine and prilocaine were used.

A comparison of the observed frequency of the paresthesia reported to the PLP and the expected frequency, based on the distribution of use of local anesthetics in Ontario in 1993, is shown in Table VI. Based on the total number of cartridges administered in 1993, the probability of a paresthesia occurring if articaine is used can be estimated to be 2.27 per one million injections, and when prilocaine was used, 1.7 per one million injections. Also, as seen in Table VI, statistical analysis of the 1993 data shows that the differ-

TABLE VI

Chi-Square Analysis of All Agents: 1993

Anesthetic Agent	Total # of Cartridges Used	Observed Frequency	Expected Frequency	$\frac{(Obs - Exp)^2}{Exp}$
Articaine	4,398,970	10	5.298	4.173
Bupivacaine	241,679	0	0.291	0.291
Lidocaine	3,062,613	0	3.688	3.688
Mepivacaine	1,569,037	0	1.890	1.890
Prilocaine	2,352,615	4	2.833	0.481
Total	11,624,914	14	14	Chi-square = 10.523, 4df, $p < 0.035$

The estimate of total number of cartridges used is based on the survey results of local anesthetic use in Ontario in 1993.¹⁹

ences between the observed and expected frequencies of paresthesia were significant ($p < 0.035$, chi-square value = 10.523, 4 df).

Table IV shows that over the 21-year period studied, articaine and prilocaine administration resulted in the greatest frequencies of paresthesia. Therefore, these two drugs were analyzed to determine if they contributed to the significant differences found in **Table VI**. As **Table VII** demonstrates, when articaine is assessed the differences between the observed and the expected frequencies are statistically significant ($p < 0.001$). **Table VIII** demonstrates that when prilocaine is assessed, the differences between the observed and the expected frequencies are also statistically significant ($p < 0.005$).

Although the chi-square analysis can be used when the expected frequencies are greater than one,²¹ it is often suggested that this test should only be considered when the expected frequencies are at least five.²⁰ This did not occur in all cells in **Table VI** to **VIII**. Therefore, the test was repeated using the exact binomial probabilities, and this confirmed the statistically significant differences for both articaine ($p < 0.002$) and prilocaine ($p < 0.025$).

Discussion

The number of cases of paresthesia reported to the PLP per year for the period 1973 to 1993, as

shown in **Fig. 1**, demonstrates that a marked increase occurred between 1983 and 1985. This increase has been mostly sustained since that time. Another marked increase in the number of cases was noted in 1990. This may be partially explained by the fact that the PLP changed its insurance underwriters at that time. In anticipation of the change, special notices and requests were sent to all dentists urging them to report any potential claims against them to the PLP. In turn, this may have led to a greater number of reported cases.

The 1993 data led to an estimate that the incidence of a non-surgical paresthesia would be 1.0 in 785,000. Interestingly, this is very close to the estimate provided by the experts in a legal case in Ontario in 1989. In a case heard by the Ontario High Court of Justice,²² the uncontradicted evidence of expert witnesses established that the risk of lingual trauma resulting from a mandibular block injection was very remote. The experts identified the risk as being "infinitesimal, minimal, extremely small, or in order of the magnitude of 1:800,000." Therefore, although it can occur, it appears that the likelihood of patients suffering from paresthesia simply from the injection itself is extremely low. The experts also stated that the low observed frequency of paresthesia did not warrant advising every patient of this risk prior to each injection.²³

The results of this study are based on the voluntary reporting of paresthesia to the PLP. It is not compulsory for a dentist to report each occurrence of paresthesia, and it is reasonable to assume that not all cases were identified. Therefore, it is quite possible that the true incidence of non-surgically induced post-injection paresthesia may be greater than 1.0 in 785,000. Furthermore, this study excluded cases where surgery was involved, as surgery is assumed to be a more prominent cause of paresthesia. This group may also include cases that were due to the injection itself, and not the result of surgical trauma to the nerve. In fact, this would further increase the likelihood that the true incidence of paresthesia is greater than the number estimated by this study.

Hemorrhage in the neural sheath, trauma to the nerve by the needle, and neurotoxicity of the local anesthetic have been suggested as three hypothetical causes of post-injection paresthesia. The theory that hemorrhage in the neural sheath leads to paresthesia proposes that the needle penetrates the neural fascicles into the central arteriole or the epineural blood vessels, causing hemorrhage.²⁴ An intraneural hematoma forms, causing pressure on the nerve fibres, which results in metabolic and functional disturbances. Usually the hematoma and the intraneural edema resorb within several weeks and function returns. If

TABLE VII

Chi-Square Analysis For Articaine Alone In 1993

Anesthetic Agent	Total # of Cartridges Used	Observed Frequency	Expected Frequency	$\frac{(Obs - Exp)^2}{Exp}$
Articaine	4,398,970	10	5.2980	4.173
Others	7,225,944	4	8.7028	2.541
Total	11,624,914	14	14	Chi-square = 6.715, 1df, $p < 0.01$

Anesthetic Agent	Total # of Cartridges Used	Observed Frequency	Expected Frequency	$\frac{(Obs - Exp)^2}{Exp}$
Articaine	4,398,970	10	4.744	5.823
Others excluding prilocaine	4,873,329	0	5.256	5.256
Total	9,272,299	10	10	Chi-square = 11.078, 1df, $p < 0.001$

This chi-square analysis for articaine is demonstrated above. Table IV showed that articaine and prilocaine had the greatest frequencies of paresthesia. Therefore, these agents were analyzed to determine if they contributed to the significant differences found in Table VI. It can be seen that when articaine is assessed against the other local anesthetics, the difference between the observed and the expected frequencies are statistically significant. As Table VIII demonstrates that prilocaine contributes significantly to paresthesia, the more accurate analysis would compare articaine with the other drugs excluding prilocaine. This is illustrated in the lower half of the table. Again, it is found that the difference between the observed and the expected frequencies are statistically significant ($p < 0.001$). Furthermore, as the cell sizes are small, the statistical test was repeated using the exact binomial probability distribution, and this confirmed that the difference between the observed and the expected frequencies is statistically significant whether articaine is compared to all others ($p = 0.022$), or if compared to all others excluding prilocaine ($p = 0.00115$).

scar tissue forms, however, it can cause permanent pressure and loss of sensation.

The trauma theory suggests that the needle can sever the nerve and thus cause paresthesia.⁵ There are no reports demonstrating that the gauges of the needles used in dental syringes are large enough to produce a complete severance of the inferior alveolar or lingual nerves, but simple contact may be sufficient to induce a transient paresthesia.⁴ The 25-gauge needle is the largest needle commonly used in dentistry. With an external diameter of 0.45 mm, it is considerably smaller than the lingual nerve, which has been reported to have an average diameter of 1.86 mm.²⁵ There were insufficient data from this study to adequately investigate a cause of paresthesia based on needle gauge, but the results that were available did not suggest any relationship.

Concern has also been expressed about the neurotoxicity of local anesthetics.¹⁸ Neurologic

deficits following the use of five per cent lidocaine during continuous spinal anesthesia have been reported.²⁶⁻²⁸ The mechanism for this action is not clear. However, it has been stated that local anesthetics produce neurotoxicity on large and small nerve fibres by a mechanism other than ischemia.¹⁸

Another suggestion is that paresthesia may occur if the local anesthetic is metabolized into an alcohol product in the vicinity of a sensory nerve, with the alcohol subsequently inducing neurotoxicity.¹⁴ This latter theory has not been supported elsewhere.

Although it has been previously stated that there is a greater incidence of paresthesia with ester local anesthetics than is observed with amides,²⁹ this view has been challenged recently as no specific toxicity of the ester-linked locals was demonstrated.¹⁸

This study did note differences in the incidence of paresthesia based on the drug used. However, this could simply reflect the overall frequency of use of these particular local anesthetics, in which

case one would assume that the drug itself was not a causative factor. This led the authors to test the null hypothesis that the drug used had no effect on the incidence of paresthesia. As this analysis required information on the distribution of use of local anesthetics in Ontario, a survey of local anesthetic use in 1993 in the province was conducted.¹⁹ The results of the survey are incorporated into Tables VI through VIII.

Using the survey data, it was possible to determine whether the observed reports of paresthesia were similar to the expected frequency, based on usage. Statistical analysis led to a rejection of the null hypothesis. Both articaine and prilocaine were significantly associated with paresthesia.

The reasons for the increased reports of paresthesia with articaine and prilocaine are difficult to explain. Although paresthesia based on drug metabolism has been suggested,^{14,15} little support has been given for this theory. Most textbooks on the pharmacology of local anesthetics state that



On The Biting Edge.

DENTSPLY has been the market leader in prosthodontics for the past 75 years.

We got there by offering such outstanding products as Trubyte Teeth, including a mould and shade system that provides the most complete line of personalized options available — with strong wear resistance and superior aesthetics. Triad, Jeltrate and Lucitone 199 are all equally recognized as the highest quality materials.

It isn't only innovative designs and materials that's put us out front.

We offer the largest inventory of teeth in Canada. We also offer a range of services for dental care professionals second to none. Such as our tooth return policy. Chairside tools, and shade and mould guides. The most extensive distribution network in the field. Plus ongoing technical bulletin information.

At DENTSPLY, we've always believed in giving you more to work with. And we always will. Maybe that's what gives us more bite as committed partners in dental healthcare.

Laboratory Division

DENTSPLY
CANADA

Offering you the full treatment.

TORADOL

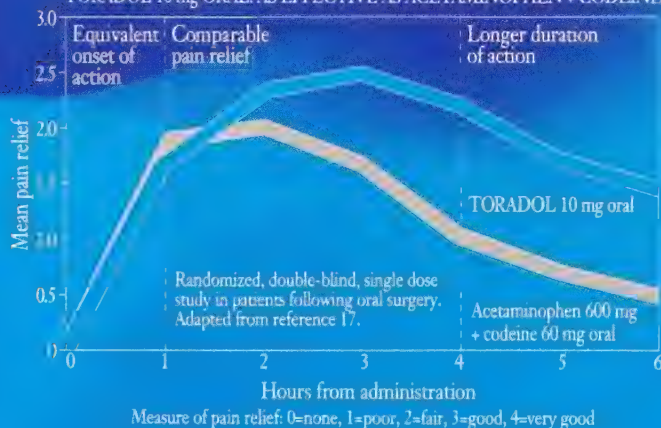
Providing highly effective relief in acute dental pain.



Current strategies in acute pain management suggest a non-narcotic analgesic should be used first, before a narcotic is considered.¹⁰

Toradol (ketorolac tromethamine) oral has been proven effective in acute post-dental surgical pain such as third molar extraction pain and mandibular pain.^{17,18,62} Toradol may also provide effective relief for your patients suffering from toothache pain and endodontic/periodontic pain.

TORADOL 10 mg ORAL: AS EFFECTIVE AS ACETAMINOPHEN + CODEINE



Unlike narcotics which work at the CNS, Toradol works peripherally, at the site of the pain,^{2,3,58} and therefore has a lower incidence of nausea, dizziness, drowsiness and constipation.^{17,18,21,22} The lower CNS side effects may be of particular benefit to patients who need to drive, operate machinery and remain alert or active.

By class, Toradol belongs to the non-steroidal anti-inflammatory drug (NSAID) family. However, unlike conventional NSAIDs, it is a potent analgesic agent with minimal anti-inflammatory and antipyretic activity. As with all NSAIDs, the most common side effects with Toradol involve the G.I. tract.

With proven efficacy and patient tolerability, Toradol oral is a logical first choice in the short-term management of acute dental pain.

TORADOL
 10 mg tablets & 30 mg/mL IM injections KETOROLAC TROMETHAMINE

Effectively treating acute pain

Treatment not to exceed 7 days for musculoskeletal pain. Post-surgical patients not to exceed 5 days.

TABLE VIII

Chi-Square Analysis For Prilocaine Alone In 1993

Anesthetic Agent	Total # of Cartridges Used	Observed Frequency	Expected Frequency	$\frac{(\text{Obs} - \text{Exp})^2}{\text{Exp}}$
Prilocaine	2,352,615	4	1.302	5.591
Others excluding articaine	4,873,329	0	2.698	2.698
Total	7,225,944	4	4	Chi-square = 8.289, 1df, $p < 0.005$

The chi-square analysis for prilocaine is demonstrated above. Table IV showed that articaine and prilocaine had the greatest frequency of paresthesia. As Table VII demonstrated that articaine contributes significantly to paresthesia, the more accurate analysis would compare prilocaine with other drugs excluding articaine. It can be seen that the difference between the observed and the expected frequencies is statistically significant ($p < 0.005$). As the cell sizes are small, the statistical test was repeated using the exact binomial probability distribution, and this confirmed that the difference between the observed and the expected frequencies is statistically significant ($p = 0.0224$).

there is no significant local neurotoxicity.^{4,30-32} However, a review of the scientific literature suggests that local anesthetics do have the potential for neurotoxicity.^{16-18,27,28,33} Our study may provide support for this concept.

It is not apparent why articaine and prilocaine would predispose to paresthesia, while the other amides — lidocaine, mepivacaine, and bupivacaine — do not. There are differences in the biotransformation of these drugs, but this occurs in organs away from the site of the paresthesia. Any putative toxic metabolite would have other, systemic, actions. The only common feature between articaine and prilocaine is that they are the only injectable local anesthetics used in dentistry that have a concentration of four per cent. The other local anesthetics all have lower drug concentrations. It may be speculated that if there is a toxic local metabolite involved, it may manifest toxicity simply due to the higher concentration of articaine and prilocaine, as opposed to any unique characteristic. It may be worth noting that an *in vivo* lidocaine study on the rat trigeminal nerve found that the drug's effect on inhibition of rapid axonal transport was reversible, except when the four per cent solution was used. In those cases, recovery was not complete even after 4.5 hours.³⁴ This may be consistent with the concept of the irreversible ten-

dency of the more concentrated formulation. As discussed earlier, a five per cent solution of lidocaine was also associated with neurologic deficits in spinal anesthesia.²⁶⁻²⁸ Furthermore, "the lowest effective concentration of local anesthetic" has been recommended to reduce the potential for neurotoxicity in spinal anesthesia.²⁷ It may simply be that the more highly-concentrated anesthetics predispose to paresthesia.

Prilocaine has been used clinically since 1960,³⁰ and may be indicated when a reduced dose of vasoconstrictor is desired. Articaine has been used increasingly since being introduced in Canada in 1983. Fig. 1 demonstrates a most likely coincidental finding that the reports of paresthesia began to increase in 1984.

Although no differences in articaine's local anesthetic capabilities have been demonstrated in any published scientific study,³⁵⁻³⁷ it has been suggested that the drug can be effective when used by infiltration instead of mandibular block.^{4,38} Therefore, it may be speculated that dentists use this drug more frequently for infiltration than mandibular block. If this is true, it should have reduced the likelihood of articaine being reported associated with paresthesia, as all 143 of the non-surgical cases reported to the PLP occurred by mandibular block. In spite of this, articaine was associated with paresthesia beyond what would

have been expected based on its use.

Reports of paresthesia by maxillary infiltration are very rare. However, a literature search did identify one report. Interestingly, this maxillary paresthesia occurred with articaine.³⁹

In conclusion, this retrospective study found that the overall incidence of paresthesia following local anesthetic administration for non-surgical procedures in dentistry in Ontario is very low, with only 14 cases being reported out of an estimated 11,000,000 injections in 1993. However, if paresthesia does occur, the results of this study are consistent with the suggestion that it is significantly more likely to do so if either articaine or prilocaine is used.

The reasons for these findings are speculative only. It is hoped that this study will stimulate similar surveys in other locations to determine if the Ontario results are simply an anomaly or, alternatively, indicative of a mild neurotoxicity due to specific formulations. In turn, this may stimulate more research into our understanding of the neurotoxicity of local anesthetics. The outcome should be improved care for our patients. In the interim, dentists should continue to select the drugs they administer, including local anesthetics, only after carefully taking into consideration all the risks and benefits involved. ■



Acknowledgements: The authors wish to thank Drs. Adel Csima and Mel Gardner for their assistance with the statistical analysis. These data were submitted for presentation to the 1995 American Academy of Dental Research meeting in San Antonio, Texas.

Dr. Haas is an associate professor, department of anesthesia, faculty of dentistry, and department of pharmacology, faculty of medicine, at the University of Toronto; and is in the department of dentistry, Sunnybrook Health Science Centre.

Dr. Lennon is a consultant with the Professional Liability Program of the Royal College of Dental Surgeons of Ontario.

Reprint requests to: Dr. D. Haas, Department of Anesthesia, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, ON M5G 1G6.

References

1. Moore, P.A. Preventing local anesthesia toxicity. *JADA* 123:60-64, 1992.
2. Bosco, D.A., Haas, D.A., Harrop, K. et al. An anaphylactoid reaction following local anesthesia: A case report. *Anesth Pain Control Dent* 2:87-93, 1993.
3. Fiset, L., Milgrom, P., Weinstein, P. et al. Psychophysiological responses to dental injections. *JADA* 111:578-583, 1985.
4. Malamed, S. *Handbook of Local Anesthesia*. C.V. Mosby, 1990.
5. Kipp, D., Goldstein, B.H. and Weiss, W.W. Dysesthesia after mandibular third molar surgery: a retrospective study and analysis of 1,377 surgical procedures. *JADA* 100:185-192, 1980.
6. *Stedman's Medical Dictionary*. Williams & Wilkins, 23rd ed., 1976.
7. Colin, W. and Donoff, R.B. Restoring sensation after trigeminal nerve injury: a review of current management. *JADA* 123:80-85, 1992.
8. Wofford, D.T. and Miller, R.I. Prospective study of dysesthesia following odontectomy of impacted mandibular third molars. *J Oral Maxillofac Surg* 45:15-19, 1987.
9. Bochlogyros, P.N. A retrospective study of 1,521 mandibular fractures. *J Oral Maxillofac Surg* 43:597-599, 1985.
10. Karas, N.D., Boyd, S.B. and Sinn, D.P. Recovery of neurosensory function following orthognathic surgery. *J Oral Maxillofac Surg* 48:124-134, 1990.
11. La Banc, J.P. Inferior alveolar nerve repair after treatment of benign cysts and tumors of the mandible. *Oral Maxillofac Clinics North Am* 3:209-222, 1991.
12. Harn, S.D. and Durham, T.M. Incidence of lingual nerve trauma and postinjection complications in conventional mandibular block anesthesia. *JADA* 121:519-525, 1990.

13. Shannon, I.L. and Wescott, W.B. Alcohol contamination of local anesthetic cartridges. *J Acad Gen Dent* 20:21, 1974.
14. Nickel, A.A. A retrospective study of paresthesia of the dental alveolar nerves. *Anesth Prog* 37:42-45, 1990.
15. Nickel, A.A. Trigeminal nerve injury. Letter to editor. *JADA* 124:17-18, 1993.
16. Steen, P.A. and Michenfelder, J.D. Neurotoxicity of anesthetics. *Anesthesiology* 50:437-453, 1979.
17. Myers, R.R., Kalichman, M.W., Reiser, L.S. et al. Neurotoxicity of local anesthetics: altered perineurial permeability, edema, and nerve fiber injury. *Anesthesiology* 64:29-35, 1986.
18. Kalichman, M.W., Moorhouse, D.F., Powell, H.C. et al. Relative neural toxicity of local anesthetics. *J Neuropathology Experimental Neurology* 52:234-240, 1993.
19. Haas, D.A. and Lennon, D. A survey to determine local anesthetic use in dentistry in Ontario. *J Can Dent Assoc* 61:319-330, 1995.
20. Daniel, W.W. *Biostatistics: a foundation for analysis in the health sciences*. 3rd ed. John Wiley & Sons, 1983.
21. Snedecor, G.W. and Cochran, W.G. *Statistical Methods*. 7th ed. Iowa State University Press, 1980.
22. Supreme Court of Ontario. Trial proceedings #158/89; Vol 2:389-446, 1989.
23. Supreme Court of Ontario. Trial proceedings #158/89; Vol 3:494-497, 1989.
24. Mozsary, P.G. and Middleton, R.A. Microsurgical reconstruction of the lingual nerve. *J Oral Maxillofac Surg* 42:415-420, 1984.
25. Kiesselbach, J.E. and Chamberlain, J.G. Clinical and anatomic observations on the relationship of the lingual nerve to the mandibular third molar region. *J Oral Maxillofac Surg* 42:565-567, 1984.
26. Kane, R.E. Neurologic deficits following epidural or spinal anesthesia. *Anesth Analg* 60:150-161, 1981.
27. Rigler, M.L., Drasner, K., Krejcie, T.C. et al. Cauda equina syndrome after continuous spinal anesthesia. *Anesth Analg* 72:275-281, 1991.
28. Lambert, D.H. and Hurley, R.J. Cauda equina syndrome and continuous spinal anesthesia. *Anesth Analg* 72:817-819, 1991.
29. Gruber, L.W. Preliminary report on the use of Xylocaine as a local anesthetic in dentistry. *J Dent Res* 29:137, 1950.
30. Strichartz, G.R. and Covino, B.G. Local Anesthetics. In: *Anesthesia*, Miller, R.D., ed. 3rd ed., New York, Churchill Livingstone, 1990.
31. Yagiela, J.A. Local anesthetics. In: *Pharmacology and Therapeutics for Dentistry*. Neidle, E.A. and Yagiela, J.A., eds., C.V. Mosby, 1989.
32. Yagiela, J.A. Local anesthetics. In: *Management of Pain and Anxiety in Dental Practice*. Dionne, R.A. and Phero, J.C., eds., Elsevier, 1991.

33. Barsa, J., Batra, M., Fink, B.R. et al. A comparative in vivo study of local neurotoxicity of lidocaine, bupivacaine, 2-chloroprocaine, and a mixture of 2-chloroprocaine and bupivacaine. *Anesth Analg* 61:961-967, 1982.
34. Fink, B.R. and Kish, S.J. Reversible inhibition of rapid axonal transport in vivo by lidocaine hydrochloride. *Anesthesiology* 44:139-146, 1976.
35. Donaldson, D., James-Perdok L., Craig, B.J. et al. A comparison of Ultracaine DS (articaine HCl) and Citanest forte (prilocaine HCl) in maxillary infiltration and mandibular nerve block. *J Can Dent Assoc* 53:38-42, 1987.
36. Haas, D.A., Harper, D.G., Saso, M.A. et al. Comparison of articaine and prilocaine anesthesia by infiltration in maxillary and mandibular arches. *Anesth Prog* 37:230-237, 1990.
37. Haas, D.A., Harper, D.G., Saso, M.A. et al. Lack of differential effect by Ultracaine™ (articaine) and Citanest™ (prilocaine) in infiltration anesthesia. *J Can Dent Assoc* 57:217-223, 1991.
38. Lemay, H., Albert, G., Hélie, G. et al. Ultracaine in conventional operative dentistry. *J Can Dent Assoc* 50:703-708, 1984.
39. Bernsen, P.L.J.A. Peripheral facial nerve paralysis after local upper dental anesthesia. *Eur Neurol* 33:90-91, 1993.

DID YOU KNOW?

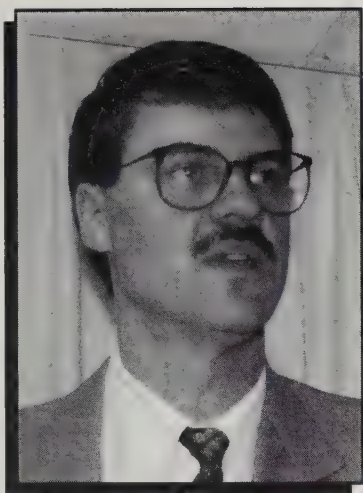
Ingenuity Pays

In 1912 a Cleveland candy maker named Clarence Crane decided to make a mint to sell in the summer. Until then, most mints were imported from Europe. Crane figured he could cut the price by making them in the United States.

He had the candy manufactured by a pill-maker who discovered that his machinery would only work if it punched a hole in the middle of each candy.

So Crane cleverly called the mints Lifesavers.





The Canadian Dental Association Guidelines On Chewing Gum Recognition

Hardy Limeback, B.Sc., PhD, DDS

Introduction

CDA's Silver Seal of Recognition program for sugarless chewing gum was conceived seven years ago, when the consumer products recognition (CPR) committee first began considering the feasibility of creating a food products category. The original intent of the CPR committee was to recognize food products, including chewing gum, that could be shown to significantly benefit the oral health of Canadians.¹ However, it soon became apparent that affixing a therapeutic claim of this nature to food products would be untenable from a marketing perspective.

The Health Protection Branch (HPB) of Health Canada prohibits third-party endorsement of certain foods. Furthermore, both the U.S. Federal Drug Administration (FDA) and HPB prohibit therapeutic claims both on the packaging and in the advertisement of food products.

While it could be argued that chewing gum is not a food in the usual sense of the word — it was never designed to provide the average person with nourishment — HPB has always classified chewing gum as a food product. As a result, a chewing gum manufacturer wishing to include the existing CDA Seal of Recognition endorsement and to make health claims on the product labelling, or

even in advertisements, would have to market its product as a non-prescription, over-the-counter drug.

The committee subsequently determined that most of the manufacturers' marketing concerns could be resolved if acceptable food products, such as chewing gum, were recognized only as products that did not promote tooth decay. In 1990, CDA's board of governors approved the creation of a new program to recognize food products in this category, and gave the CPR committee the authority to proceed in this direction.

After much consultation, the CPR committee proposed that CDA should adopt a two-tiered Consumer Product Recognition Program, which would incorporate a Silver Seal of Recognition and a Gold Seal of Recognition. That recommendation was adopted by the board of governors in 1991.

Following the board's approval of a two-tiered approach to CDA's Consumer Product Recognition Program, the CPR committee began developing specific guidelines for a Silver Seal Recognition Program for sugarless gum. This program was approved by the CDA board in August 1992. Two months later, on October 16, 1992, Trident sugarless chewing gum became the first chewing

gum in North America to be awarded the CDA Silver Seal of Recognition.

Despite previous attempts to initiate a similar program in the United States, the American Dental Association (ADA) and the FDA had failed to come to any agreement that would allow a professional endorsement of any food product.

What Is the CDA Silver Seal Of Recognition?

When the recognition of sugarless chewing gum was first proposed by CDA,¹ there was a large body of literature on the dental benefits of xylitol as a sucrose substitute. However, while several studies showed that chewing xylitol-containing chewing gum two or three times a day reduced the caries incidence in children by up to 65 per cent, there was a lack of vehicle control studies to distinguish whether it was actually the xylitol that provided the anti-caries effect, or whether it was simply the saliva stimulated by the chewing gum. Nevertheless, the dental benefits of chewing sugarless gums were well documented.

CDA decided to initiate a chewing gum recognition program that would be developed in two stages. The first stage would recognize only those chewing gums that were considered sugarless by HPB. It was decided that this would be called the Silver Seal of

JOURNAL

April/
Avril
1995
Vol. 61
No. 4

Recognition. CDA's Gold Seal of Recognition for chewing gum would then be developed specifically for products containing a proven therapeutic anti-carries agent in clinically tested doses.

Many studies have shown that habitual consumption of xylitol reduces plaque volume, reduces plaque adherence, alters plaque metabolism and may even change oral flora to a less cariogenic flora.² This data suggests that xylitol, a sugar substitute used in some brands of chewing gum, may have special anti-cariogenic properties. Nevertheless, only one study so far has made an attempt to measure the added dental benefits of using xylitol as the active ingredient in chewing gum.³

After considering all of the possible ramifications of the endorsement of chewing gum, the CPR committee felt that a chewing gum recognition program, even if it was initiated at the silver seal level, would serve to improve the overall oral health of the general public. The goal was to encourage the sale of sugarless gums at the candy counters and, in the process, discourage the sale of chewing gums containing sucrose.

In some European countries, professional recognition of chewing gums that are safe for teeth has already resulted in the domination of sucrose-free chewing gums in the marketplace (reported at the Xylitol Endorsement Workshop held Oct. 2, 1994 at the recent FDI World Dental Congress in Vancouver).

Based on current literature, as well as on submissions from chewing gum manufacturers, public health units and private practitioners across Canada, the CPR committee was satisfied that no scientific studies existed to suggest that increased use of chewing gum results in:

- an increase in the incidence of TMJ disorders;
- an increase in the incidence of periodontal diseases;
- a more rapid deterioration of existing dental restorations;
- a significant increase in the release of mercury from dental amalgams; or

- an increase in the incidence of chewing gum aspiration.

Even though, under the guidelines of the existing consumer products recognition program, all drug products receiving CDA recognition had to have been previously assessed as safe by HPB, the CPR committee wanted to address all relevant dental health safety issues before launching CDA's new chewing gum recognition program.

Current Claims Allowed By Health Protection Branch (HPB) On Chewing Gum

Does Not Promote Tooth Decay

This statement is permitted on sugarless chewing gum sold as food, because it does not make the claim that dental decay can actually be reduced if the product is consumed under normal conditions (which would be a therapeutic claim). To date, this claim has appeared on at least one chewing gum product sold by a major chewing gum manufacturer.

Fights Cavities

This statement is not permitted on food products, because it is a therapeutic claim. Even health claims such as "promotes good dental health" will likely not be allowed on food products, including chewing gums, sold as foods.

Products that bear a therapeutic claim, or contain a drug, must have either a General Product (GP) or Drug Identification Number (DIN) awarded by HPB. These numbers are located on the product packaging, to provide the consumer with some assurance that the government provides a certain measure of surveillance over the manufacturing, safety testing and advertising of these products. Before any drug or food product is recognized by CDA, including chewing gum, it must have a GP number or a DIN number identifying the product as a drug approved by HPB. In the future, however, separate guidelines may be established by the CPR committee for the recognition of sugarless chew-

ing gum being sold as a food product.

Guidelines For the CDA Silver Seal of Recognition of Chewing Gums

Under CDA's two-tiered Consumer Product Recognition Program, chewing gum manufacturers whose products are sugarless and considered safe for teeth may apply to the CPR committee for Silver Seal Recognition. The silver seal is designed to recognize the oral health benefits of sugarless chewing gums in general. However, when chewing gum is used as a vehicle for the delivery of an active ingredient with proven therapeutic effectiveness against dental disease, CDA will consider a higher, gold seal, level of recognition. This higher recognition could be awarded after the CPR committee has reviewed published clinical evidence to support a therapeutic claim, as well as the evidence presented by the manufacturer. Gold seal guidelines are currently being developed.

Silver Seal Recognition Statement Permitted on Packaging and Advertisements

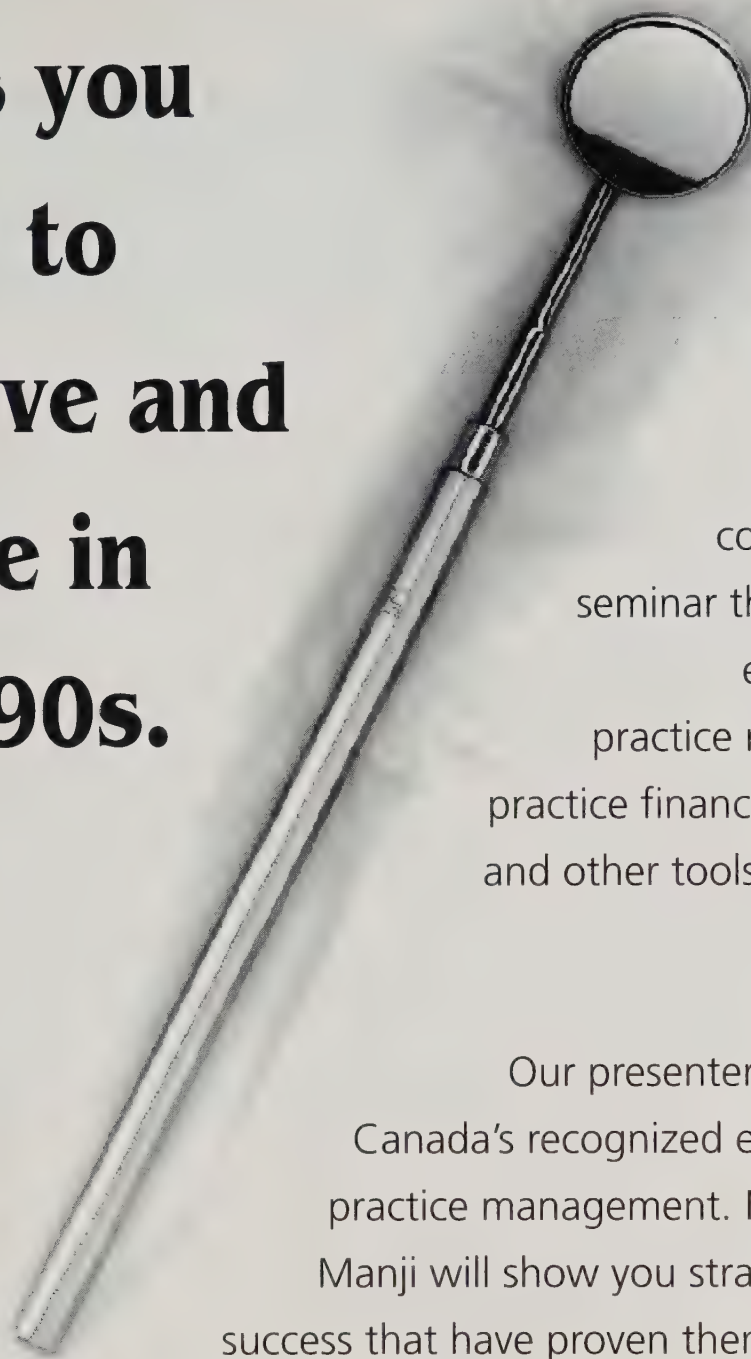
"Recognized by the Canadian Dental Association" is the simplest version of CDA recognition. This statement appears alone, without any additional qualifying statements from CDA, next to a silver-colored CDA crest (the same crest that is currently used on toothpastes). The use of the crest and statement is permitted in advertisements and on product labels, but certain criteria and restrictions apply (see below). It is not the intention of CDA, at this time, to recognize therapeutic claims made for chewing gums.

Criteria for Recognition

- Only chewing gums with a GP number or DIN awarded by HPB will be considered for recognition. GP numbers must be awarded on the basis of benefit to oral health. Initially, the claims for which GP numbers and DINs are awarded will be those specifically limited to dental benefit claims made for

One of the tools you need to survive and thrive in the '90s.

CANADIAN
DENTAL
ASSOCIATION



But there are others and we'd like to tell you about them. You are cordially invited to a one day seminar that's packed with practical, effective tips and advice on practice management, patient care, practice financial planning, team building and other tools you need to survive – and thrive – in the '90s.

Our presenter is one of Canada's recognized experts on practice management. Mr. Imtiaz Manji will show you strategies for success that have proven themselves in hundreds of practices from coast to coast.



Windsor
January 13, 1995

Winnipeg
May 5, 1995

Halifax
February 10, 1995

Hamilton
March 3, 1995

London
June 23, 1995

Saskatoon
May 12, 1995

See next page for more details...



The Canadian Dental Association

One Day Seminar • Limited Enrolment • CE Credits Pending*

Surviving and Thriving in the '90s

Re-engineering your practice and life plan for success!

Strategies for Patient Care

- ✓ Discover how successful practices achieve 90% retention in hygiene.
- ✓ Determine how many hygiene days your practice really needs to meet patient care needs.
- ✓ Turn your patients into in-house marketers. Learn 9 times you can ask for a referral comfortably.
- ✓ Learn how to identify your patients' motivations and sidestep reasons to avoid treatment.
- ✓ Find out what patients want to know to accept ideal treatment & maintain optimum oral health.
- Minimize Downtime

Strategies for Transition Management

- ✓ Discover when and how to integrate an associate into your growing practice.
- ✓ Find out why "equity" associateships are so successful.
- ✓ Untangle practice stagnation and overcome saturation through transition options.
- ✓ Learn how to plan your calendar for the re-engineered practice.
- Maximize Practice Value

Strategies for Practice Financial Planning

- ✓ Learn to control practice expenses.
- ✓ Discover how to anticipate your cashflow and eliminate shortfalls.
- ✓ Find out the vital signs of financially healthy practices.
- ✓ Learn to play "what if's" before making important decisions.
- Eliminate Financial Stress

Strategies for Team Leadership

- ✓ Learn the 6 key factors in practice management that your team must understand.
- ✓ Adjust your team's job roles to increase productivity and maximize patient care.
- ✓ Discover how to set precise and realistic goals for team performance, accountability and incentives.
- ✓ Find out how team meetings and communication are essential in the successful practice.
- ✓ Learn 20 common mistakes dentists make which decrease team performance & increase overhead.
- Build a Highly-Motivated Team

Agenda 8:30: Sign-in • 9:00: Begin • 12:15: Break (lunch included) • 1:15: Resume • 4:00: Close

Pre-registration is required. There will be no on-site registrations. Register early since enrolment is limited.

OFFICE MANAGER/SPOUSE attending with dentist \$80

DENTIST \$160

SUBTOTAL

GST 7% of subtotal (#R106845209)

TOTAL

Number	Total
	\$
	\$
	\$
	\$
	\$

Name: _____ CDA Membership #: _____

Street: _____ City/Province: _____

Postal Code: _____ Telephone (Office): _____ Seminar Location: _____

A receipt for the above registration fees will be issued to: _____

☐ Cheque made payable to the Canadian Dental Association enclosed. (No post-dated cheques)

☐ Visa

☐ MasterCard

Signature: _____ Credit Card #: _____ Expiry Date: _____

Mail or fax registration form and payment to:

Canadian Dental Association, Member Services, 1815 Alta Vista Drive, Ottawa, ON, K1G 3Y6

Register today! Call CDA toll-free 1-800-267-6354 or fax 1-613-523-7736.

Confirmation of your enrolment will be received by mail. Cancellation policy: Full refund 21 days prior to seminar.

*CE Credits will apply subject to Provincial approvals pending.

CDA member dentists
receive a \$75 credit towards
the purchase of
Taking Care of Business
Volumes 1, 2 & 3

sugarless gums. Over-the-counter products that have GP numbers or DINs, but contain unrelated active ingredients (e.g. analgesics), will not be considered at this time.

2. The chewing gum to receive recognition must be classed as sugarless by HPB. CDA requires, however, that the manufacturer provide a detailed list of ingredients so that the actual carbohydrate content can be assessed. HPB's definition of sugarless refers primarily to sucrose free. Sugarless gums, according to this definition, may still contain monosaccharides, disaccharides, sugar alcohols, complex carbohydrates and other sucrose substitutes.
3. The chewing gum to receive recognition must not contain ingredients that could potentially harm oral tissues. At this time, CDA will not recognize sugarless chewing gums containing sucrose substitutes that have cariogenic potential of any significance. The chewing gum will likely not receive recognition if:
 - a) its principle sweetener(s) is (are) fructose, glucose, maltose, or lactose;
 - b) it contains significant amounts of so-called natural sweeteners (e.g. honey, brown sugar, caramel);
 - c) it contains significant amounts of cariogenic complex carbohydrates (e.g. glycogen or starch from flours); or
 - d) it contains significant levels of acids that could result in the erosion of dental hard tissues.

To obtain CDA recognition, it's likely that chewing gums will have to contain non-cariogenic sugar substitutes, artificial sweeteners and/or non-cariogenic complex carbohydrates. The assignment of HPB's sugarless category to a product does not automatically guarantee CDA recognition once the GP number or DIN has been awarded. Before awarding the silver seal, CDA reserves the right to request evidence from the manu-

facturers that the ingredients in their products will not harm oral tissues or dental structures. In the absence of clinical evidence that the product is safe for teeth, the CPR committee may determine that additional testing is required prior to recognition, such as the pH touch electrode test currently being used in Sweden.⁵

The Contract

CDA has drafted a standard contractual agreement that outlines the conditions under which the Silver Seal of Recognition for chewing gums may be used. Full details of the application procedure, the cost of the program, the contracts and schedules, and how CDA's Silver Seal of Recognition program for chewing gums is administered have been finalized and are available on request to interested parties.

The Cost Of the Chewing Gum Recognition Program

The application and renewal fees charged to manufacturers are set on a cost recovery basis, and take into account the cost of running two to three meetings of the CPR committee per year, including proportional overhead costs. Manufacturers with several brands that are essentially identical except for taste generally receive a negotiated reduction in the total fees charged. Other than expenses related to travel, no CDA member dentist, employee or reviewer receives any financial benefit from the recognition program. Fees will likely be adjusted downwards as more brands of chewing gum seek and receive recognition.

Global Markets, International Recognition and Future Recognition Programs

The recognition of chewing gum and other safe snack foods has been under way for some time in Europe, particularly in Finland, Sweden and Switzerland. Criteria for the recognition of dentally-safe candies were developed based on the principle of substituting sucrose with xylitol. In general, if 50 per cent of the sweetener used in a

candy is xylitol, if the remaining sweeteners are sucrose substitutes such as the sugar alcohols (e.g. sorbitol, mannitol), if the food contains no harmful acids that could cause enamel erosion (e.g. significant amounts of citric acid), and if the food produces an acceptable plaque pH profile using the pH touch electrode in four caries susceptible test subjects, then the food product will receive official endorsement by the three Scandinavian dental associations.⁵ A "Zahnfreundlich" (translation: tooth-friendly) logo is awarded in Switzerland to products that are considered safe for teeth. This award is based on the pH profiles of dental plaque *in situ* using telemetry measurements, and is not linked to xylitol content.⁴

At the recent 1994 FDI World Dental Congress, a satellite workshop was held to discuss the endorsement of xylitol-containing food products and other sweets. It was agreed that all professional endorsements of food products should be based on sound scientific evidence that the products are a benefit to the public. Recently, advertisements (from the U.S.) by a competing chewing gum manufacturer about a chewing gum that is "the first to be recognized by the FDI" have surfaced. Many more professional recognition programs such as this will likely appear in the near future as manufacturers scramble to obtain professional endorsement of their products.

It could be argued that simple endorsement of a product by a professional dental organization, without prior scientific scrutiny, should not be permitted by the dental community — HPB will likely not regulate which professional body can or cannot endorse a consumer product. The profession and the public should therefore be kept informed about these programs (hence this article).

If various dental organizations begin recognizing certain consumer products, one likely consequence is that the public will become confused, thereby diminishing the value of all recognition programs. CDA will continue to develop recognition pro-

Periodontics, Implants, and Restorative Dentistry

The State of the Art in 1995

The Westin Hotel Copley Place, Boston
June 8-11, 1995

Friday, June 9, 1995

Regeneration of the Periodontium Supporting the Natural Tooth— Have We Identified the Elements in Predicting Success?

Gerald Kramer • Samuel Lynch
Pamela McClain • James Mellonig
Kevin Murphy • Sture Nyman

Restoration of Osseointegrated Implants—An Exploration of Various Approaches and Possibilities

Urs Belser • Frank Celenza
Steven Lewis • Stephen Parel
Carl Rieder • George Zarb

Special Anniversary Program sponsored by Nobelpharma USA

Thursday, June 8, 1995

The Brånemark System—30-Year Anniversary

Tomas Albrektsson • Patrick Henry
Torsten Jemt • Ulf Lekholm • Bo Rangert



Sponsored by
The International
Quintessence Publishing Group

Saturday, June 10, 1995

Implant Placement in Areas of Inadequate Bone—Guided Bone Regeneration

Daniel Buser • Myron Nevins
Richard Shanaman • H. P. Weber

The Sinus Elevation Procedure —Three Points of View

Axel Kirsch • Burton Langer
Ulf Lekholm • Gilbert Triplett

Restorative Alternatives for Single Teeth—Operative Dentistry, Veneers, Full Crowns

Gordon Christensen • Robert Nixon
Richard Wilson • Robert Winter

The Restoration of Periodontally Compromised Teeth

Morton Amsterdam • Peter Schärer
Howard Skurow • Arnold Weisgold

Risk Factors & Treatment Strategies for the Management of the Periodontal Pocket

Michael McGuire • Michael Newman
Robert Schallhorn • Sigmund Socransky

The 5th International Symposium on
Periodontics & Restorative Dentistry
in conjunction with the Celebration
of the 30th Anniversary of
the Brånemark System



Sunday, June 11, 1995

Contemporary Treatment of Temporomandibular Dysfunction

Leonard Abrams • Arnold Binderman
Tore Hansson • Parker Mahan
William McHarris • Kenneth Rotskoff

Immediate Implant Placement Following Tooth Extraction—Is there a "Best" Surgical Approach?

Tomas Albrektsson • William Becker
Christer Dahlin • Thomas Wilson

Surgical Advances in the Coverage of the Exposed Root

Gary Maynard • Preston Miller
Giampaolo Pini Prato • Dennis Tarnow

Surgical Alternatives for Correcting Soft Tissue Ridge Deformities

Edward Allen • David Kohn
Laureen Langer • Jay Seibert

Soft Tissue Management for Dental Implants

Oded Bahat • Roland Meffert
Gary Reiser • Louis Rose

Registration fee for the 4-day program US \$475
(Save \$50 by registering before Jan 31, 1995.)

Please send me a program and registration form for:
The 5th International Symposium on Periodontics & Restorative Dentistry

Name _____

Address _____

City _____ State _____ Zip _____

Mail or Fax this coupon to: Quintessence Publishing Co, Inc.
551 North Kimberly Drive, Carol Stream, IL 60188
Fax: 708/682-3288

grams that help dental professionals make informed choices about the consumer products they recommend to their patients.

Once the use of sugarless gum (at the expense of gum sweetened with sucrose) is widespread, the silver seal program for chewing gum will have fulfilled its mandate. The CPR committee will then endeavor to recognize only those sugarless chewing gums with clinical evidence of superior anticariogenicity. Chewing gums that might fit this category are those with clinically-effective doses of xylitol, fluoride or some other active anti-caries therapeutic agent. When these products become available, they may be eligible for the CDA Gold Seal of Recognition for sugarless anticariogenic chewing gums. The guidelines for such a recognition program are currently being developed. ■

Dr. Hardy Limeback is associate professor and acting head of the preventive dentistry department, faculty of dentistry, University of Toronto, and is the cariology/fluoride academic consultant for the consumer product recognition committee of the Canadian Dental Association. The other members of the committee are: Dr. Michael Eggert (chair), faculty of dentistry, University of Alberta; Dr. Dan Haas, faculty of dentistry, University of Toronto; Dr. Hurinler Sandhu, faculty of dentistry, the University of Western Ontario; and Dr. Edward Chan, faculty of dentistry, McGill University.

References

1. Limeback, H. and Eggert, F.M. Xylitol in Chewing Gum, A discussion on developing CDA Guidelines for the recognition of food products with dental therapeutic claims. *J Can Dent Assoc* 55:717-719, 1989.
2. Birkhed, D. Cariological aspects, of xylitol and its use in chewing gum: A review. *Acta Odontol Scand* 52:116-127, 1994.
3. Makinen, K.K., Bennett, C.A., Bisokangas, P. et al. Caries-preventive effect of polyol-containing chewing gums. *J Dent Res* 72:Spec Iss, p. 346 (abstract 1945), 1993.
4. Bar, A. Toothfriendly Sweets: the success of a joint industrial/academic public information campaign. In: *Food Ingredients European Conference Proceedings*, Expoconsult Publishers, The Netherlands, pp.12-19, 1990.
5. Prof. Goren Koch, personal communication.

ABSTRACT

Identifying True Allergy To Lidocaine

Local anesthetics are one of the most commonly administered drugs in clinical practice. Lidocaine is one of the most long standing standard local anesthetics in use and enjoys a remarkable safety record. Although adverse reactions to lidocaine are rare they can occur and there have been reports of reactions to lidocaine in the literature.

Reported adverse reactions to lidocaine administration include local swelling, persistent anesthesia, unconsciousness and even death. These reactions are due to multiple physiologic mechanisms ranging from vaso vagal syncope and local tissue reaction to true allergic reaction. True allergy to lidocaine is very rare and the incidence is thought to be less than one per cent of all adverse reactions. It is common for clinicians to call any adverse reaction to local anesthetic allergy, yet not follow-up on allergy testing to determine if this is so.

Dentists are usually reluctant to treat individuals thought to be allergic to local anesthetics because much of dental treatment is dependent on local anesthesia. Patients with true local anesthetic allergy and patients suspected of allergy often have dental treatment performed under general anesthesia or defer treatment until it becomes unavoidable. The dental treatment of patients considered to be allergic to local anesthetic is difficult at best.

This article outlines a case of an adverse reaction to the administration of lidocaine, and the follow-up to determine the possibility of true allergic reaction.

A 57-year-old woman with no history of allergy and taking no medication presented for dental treatment consisting of periodontal surgery in the upper left quadrant. One week prior to this appointment the patient had received local anesthetic for the emergency treatment of an abscess and no adverse reaction was noted. At this time facial swelling at the treatment site was present due to an oral infection.

At the second appointment for this patient 1.8 mL of two per cent lidocaine with 1:100,000 epinephrine was administered by slow infiltration in the upper left quadrant. Immediately after the administration of local anesthetic the patient was noted to have flushing of the face and neck on the right and left sides. The patient reported no symptoms and was unaware of the flushing. Blood pressure, pulse and respiration all remained stable during this time. The patient was given 100 mg of diphenhydramine and the flushing subsided after 20 minutes.

The appointment was terminated and the patient discharged after the flushing resolved. The patient had no knowledge of any previous reaction to local anesthetic administration.

A subsequent appointment was arranged for this patient and an intravenous infusion of five per cent dextrose and water was started before the administration of any medication. Lidocaine two per cent was administered by intraoral infiltration with aspiration and a bilateral flushing reaction again noted approximately 30 seconds after the injection. A blood sample was taken at this time. The patient remained asymptomatic and treatment was completed without incident. The erythema subsided 15 minutes after the administration of the local anesthetic.

The blood sample taken at this appointment was analyzed for immune complexes typically seen with allergic reaction and an in vitro test for immune system mediated reaction undertaken. The tests proved negative for reaction to the dental formulation of lidocaine, pure lidocaine with no preservatives and powder from the operator's gloves.

A subsequent administration of saline to this patient by intraoral injection yielded a flushing response identical to that seen when lidocaine was administered. The reaction was deemed to be idiosyncratic and not allergic in nature.

True allergy to local anesthetics, particularly amide type local anesthetics is rare and reactions thought to possibly be allergic should be investigated.

The differential diagnosis for adverse reaction to local anesthetic administration should include vaso vagal reaction, idiosyncratic reaction and psychological reaction. A better understanding of allergic reaction and allergy testing by dentists would help to decrease the number of patients mistakenly considered to be allergic and avoid the treatment problems these patients face.

Jackson D. et al, *JADA*; 125:1362-1366, 1994; *The DENTALETTER*, February 1995.

JOURNAL

April/
Avril
1995
Vol. 61
No. 4

TORADOL®

10 mg tablets & 30 mg/mL IM injections KETOROLAC TROMETHAMINE

Effectively treating acute pain

TORADOL® (ketorolac tromethamine) 10 mg tablets
TORADOL® IM (ketorolac tromethamine injection) 10 mg/mL or 30 mg/mL intramuscular injection
THERAPEUTIC CLASSIFICATION NSAID Analgesic Agent
ACTION

Toradol (ketorolac tromethamine) is a non-steroidal anti-inflammatory drug (NSAID) that exhibits analgesic activity mediated by peripheral effects. Ketorolac inhibits the synthesis of prostaglandins through inhibition of the cyclo-oxygenase enzyme system. At analgesic doses, it has minimal anti-inflammatory and antipyretic activity. Pain relief is comparable following the administration of ketorolac by intramuscular or oral routes. The peak analgesic effect occurs at 2-3 hours post-dosing with no evidence of a statistically significant difference over the recommended dosage range. The greatest difference between large and small doses of Toradol administered by either route is in the duration of analgesia. Ketorolac tromethamine is rapidly and completely absorbed when administered by either the oral or the intramuscular route. The pharmacokinetics are linear following single and multiple dosing. Steady state plasma levels are attained after one day of Q.I.D. dosing. Following oral administration, peak plasma concentrations of 0.7 to 1.1 µg/mL occur at an average of 44 minutes after a single 10 mg dose. The terminal plasma elimination half-life ranges between 2.4 and 9.0 hours in healthy adults, and between 4.3 and 7.6 hours in elderly subjects (mean age 72 yrs). A high fat meal decreases the rate, but not the extent, of absorption of oral ketorolac tromethamine. The use of an antacid has not been demonstrated to affect the pharmacokinetics of ketorolac. Following intramuscular administration, peak plasma concentrations of 2.2 to 3.0 µg/mL occur at an average of 50 minutes after a single 30 mg dose. The terminal plasma half-life ranges between 3.5 and 9.2 hours in young adults and between 4.7 and 8.6 hours in elderly subjects (mean age = 72 years). In renally impaired patients there is a reduction in clearance and an increase in the terminal half-life of ketorolac tromethamine (see table below). The primary route of excretion of ketorolac tromethamine and its metabolites (conjugates and the p-hydroxy metabolite) is in the urine (91.4%) with the remainder (6.1%) being excreted in the feces. More than 99% of the ketorolac in plasma is protein bound over a wide concentration range. The parenteral administration of Toradol has not been demonstrated to affect the hemodynamics of anaesthetized patients.

THE INFLUENCE OF AGE, LIVER AND KIDNEY FUNCTION ON THE CLEARANCE AND TERMINAL HALF-LIFE OF TORADOL IM¹ AND ORAL²

TYPES OF SUBJECTS	TOTAL CLEARANCE (in L/h/kg) ³		TERMINAL HALF-LIFE (in hours)	
	IM MEAN (range)	ORAL MEAN (range)	IM MEAN (range)	ORAL MEAN (range)
Normal Subjects IM (n=54) Oral (n=77)	0.023 (0.010-0.046)	0.025 (0.013-0.050)	5.3 (3.5-9.2)	5.3 (2.4-9.0)
Healthy Elderly Subjects IM (n=13), Oral (n=12) (mean age = 72, range = 65-78)	0.019 (0.013-0.034)	0.024 (0.018-0.034)	7.0 (4.7-8.6)	6.1 (4.3-7.6)
Patients with Hepatic Dysfunction IM and Oral (n=7)	0.029 (0.013-0.066)	0.033 (0.019-0.051)	5.4 (2.2-6.9)	4.5 (1.6-7.6)
Patients with Renal Impairment IM and Oral (n=9)(serum creatinine 1.9 - 5.0 mg/dL)	0.014 (0.007-0.043)	0.016 (0.007-0.052)	10.3 (8.1-15.7)	10.8 (3.4-18.9)
Renal Dialysis Patients IM (n=9)	0.016 (0.003-0.036)		13.6 (8.0-39.1)	

¹ Estimated from 30 mg single IM doses of ketorolac tromethamine

² Estimated from 10 mg single oral doses of ketorolac tromethamine

³ Litres/hour/kilogram

INDICATIONS

Oral Route: Orally administered Toradol (ketorolac tromethamine) is indicated for the short-term management (not to exceed 5 days for post-surgical patients or 7 days for patients with musculoskeletal pain) of moderate to moderately severe acute pain, including post-surgical pain (such as general, orthopaedic and dental surgery), acute musculoskeletal trauma pain and post-partum uterine cramping pain. (See WARNINGS and DOSAGE AND ADMINISTRATION)

Intramuscular Route: Intramuscular injection of Toradol is indicated for the short-term management (not to exceed 2 days) of moderate to severe acute pain, including pain following major abdominal, orthopaedic and gynecological operative procedures. The total duration of combined intramuscular and oral treatment should not exceed 5 days.

CONTRAINDICATIONS

Hypersensitivity: Like other non-steroidal anti-inflammatory drugs, Toradol (ketorolac tromethamine) has been associated with hypersensitivity reactions. Toradol should not be used when there is a known or suspected hypersensitivity to the drug and should be discontinued in patients who develop symptoms of hypersensitivity during therapy. Because of the possibility of cross-sensitivity, Toradol should not be used in patients with the complete or partial syndrome of nasal polyps, angioedema, bronchospastic reactivity (e.g. asthma) or other allergic manifestations to acetylsalicylic acid (ASA) or other non-steroidal anti-inflammatory drugs. Severe and fatal anaphylactoid reactions have occurred in such individuals.

Gastrointestinal: Toradol should not be used in patients with suspected or confirmed peptic ulcer disease, gastrointestinal bleeding or perforation, or active inflammatory disease of the gastrointestinal system or in patients who have a history of these disorders. Severe and fatal reactions have occurred in such individuals.

Renal Impairment: Toradol is contraindicated in patients with moderate to severe renal impairment or in patients at risk for renal failure due to volume depletion.

Haemorrhagic Risk: Toradol is contraindicated immediately before any major surgery, and is contraindicated intraoperatively when hemostasis is critical because of the increased risk of bleeding. Toradol is also contraindicated in patients with coagulation disorders, postoperative patients with high haemorrhagic risk or incomplete haemostasis, and in patients with suspected or confirmed cerebrovascular bleeding.

Obstetrics: Toradol is contraindicated in labour and delivery because, through its prostaglandin synthesis inhibitory effect, it may adversely affect fetal circulation and inhibit uterine musculature, thus increasing the risk of uterine hemorrhage.

Neuraxial Administration: Toradol IM is contraindicated for neuraxial (epidural or intrathecal) administration due to its alcohol content.

Concomitant Medications: Toradol is contraindicated in patients currently receiving ASA or NSAIDs because of the cumulative risks of inducing serious NSAID-related adverse events. The concomitant use of Toradol and probenecid is also contraindicated.

WARNINGS

The long-term administration of Toradol (ketorolac tromethamine) is not recommended as the incidence of side-effects increases with the duration of treatment (see INDICATIONS and DOSAGE AND ADMINISTRATION). The most serious risks associated with NSAIDs including Toradol are:

Gastrointestinal Ulcerations, Bleeding and Perforation: Serious gastrointestinal toxicity, such as bleeding, ulceration, and perforation, can occur at any time, with or without warning symptoms, during therapy with non-steroidal anti-inflammatory drugs. The incidence of gastrointestinal complications increases with dosage and duration of treatment. Elderly and debilitated patients are more susceptible to these complications. To date, studies with NSAIDs have not identified any subset of patients not at risk for developing peptic ulceration and bleeding. Post-marketing experience with Toradol suggests that there may be a greater risk of gastrointestinal ulcerations, bleeding, and perforation in the elderly, and most spontaneous reports of fatal gastrointestinal events are in the aged population.

THE LONG-TERM USE OF TORADOL IS NOT RECOMMENDED.

Renal Toxicity: The following renal abnormalities have been associated with Toradol and other drugs that inhibit renal prostaglandin biosynthesis: acute renal failure, nephrotic syndrome, interstitial nephritis, renal papillary necrosis. Elevations of blood urea nitrogen (BUN) and creatinine have been reported in clinical trials with ketorolac tromethamine. Toradol is contraindicated in patients with moderate to severe renal impairment. Hypovolemia should be corrected before treatment with Toradol is initiated. Patients who are volume depleted may be dependent on renal prostaglandin production to maintain renal perfusion and, therefore, glomerular filtration rate. In such patients, the use of drugs which inhibit prostaglandin synthesis has been associated with further decreases in renal blood flow and may precipitate acute renal failure. Predisposing factors include dehydration (e.g. as a result of extreme exercise, vomiting or diarrhea associated with the loss of at least 5 to 10% of total body weight, unreplenished blood loss of approximately 500 mL), sepsis, impaired renal function, heart failure, liver dysfunction, diuretic therapy, and advanced age. Caution is advised if ketorolac tromethamine is used in such circumstances. Close monitoring of urine output, serum urea and serum creatinine is recommended until renal function recovers.

Fluid Retention and Edema: Fluid retention, edema, NaCl retention, oliguria, elevations of serum urea nitrogen and creatinine have been observed in patients treated with Toradol. Therefore, the possibility of precipitating congestive heart failure in elderly patients or those with compromised cardiac function should be considered. Toradol should be used with caution in patients with cardiac decompensation, hypertension or other conditions which cause a predisposition to fluid retention.

Haemorrhage: Postoperative haematomas and other symptoms of wound bleeding have been reported in association with the perioperative use of intramuscular Toradol. Toradol is contraindicated in patients who have coagulation disorders. If Toradol is to be administered to patients who are receiving drug therapy that interferes with haemostasis, careful observation is advised. Use of Toradol in patients who are receiving therapy that affects hemostasis should be undertaken with caution, including close monitoring. The concurrent use of Toradol and prophylactic, low dose heparin (2500-5000 units q12h), warfarin and dextrans may also be associated with an increased risk of bleeding (see DRUG INTERACTIONS). In patients receiving anticoagulants, the risk of intramuscular haematoma formation from Toradol IM injections is increased.

Hypersensitivity Reactions: The possibility of severe or fatal hypersensitivity reactions should be considered, even for patients with no known history of previous exposure or hypersensitivity to Toradol or other NSAIDs. Counteractive measures must be available when administering the first dose of Toradol IM. As with other NSAIDs, patients should be questioned for history of allergy to NSAIDs or ASA or for the syndrome consisting of nasal polyps, ASA allergy and asthma before being prescribed Toradol. Asthmatic patients with triad asthma (the syndrome of nasal polyps, asthma and hypersensitivity to ASA or other NSAIDs) may be at particular risk for severe hypersensitivity reactions.

Use in Pregnancy and Lactation: The administration of ketorolac tromethamine is not recommended during pregnancy or lactation. After 1 day at 10 mg q.i.d. oral dosing, Toradol has been detected in the milk of lactating women at a maximum concentration of 7.9 ng/mL.

Use in Children: Safety and efficacy in children have not been established. Therefore, Toradol is not recommended for use in children under age 16.

Use in the Elderly: Because ketorolac is cleared somewhat more slowly by the elderly (See PHARMACOKINETICS) who are also more sensitive to the gastrointestinal and renal effects of NSAIDs, (See WARNINGS and PRECAUTIONS) extra caution and the lowest effective dose (See DOSAGE AND ADMINISTRATION) should be used.

PRECAUTIONS

Physicians should be alert to the pharmacologic similarity of Toradol (ketorolac tromethamine) to other non-steroidal anti-inflammatory drugs that inhibit cyclo-oxygenase.

Gastrointestinal Effects: Close medical supervision is recommended in patients prone to gastrointestinal tract irritation. In these cases, the physician must weigh the benefits of treatment against the possible hazards. Patients taking any NSAID including ketorolac tromethamine should be instructed to contact a physician immediately if they experience symptoms or signs suggestive of peptic ulceration or gastrointestinal bleeding. These reactions can occur at any time during the treatment. If peptic ulceration is suspected or confirmed, or if gastrointestinal bleeding occurs, ketorolac tromethamine should be discontinued and appropriate treatment instituted with close patient monitoring.

Hepatic Effects: Caution should be observed if Toradol is to be used in patients with impaired hepatic function, or a history of liver disease. Treatment with Toradol may cause elevations of liver enzymes, and in patients with pre-existing liver dysfunction, it may lead to the development of a more severe hepatic reaction. Meaningful elevations (greater than 3 times normal) of serum transaminases (glutamate pyruvate [SGPT or ALT] and glutamic oxaloacetic [SGOT or AST], occurred in controlled clinical trials in less than 1% of patients. If clinical signs and symptoms consistent with liver disease develop, or if systemic manifestations occur (e.g., eosinophilia, rash, etc.), ketorolac tromethamine should be discontinued. Patients with impaired hepatic function from cirrhosis do not have any clinically important changes in ketorolac tromethamine clearance. Studies in patients with active hepatitis or cholestasis have not been performed.

Hematologic Effects: Ketorolac tromethamine inhibits platelet function and may prolong bleeding time. It does not affect platelet count, prothrombin time (PT) or partial thromboplastin time (PTT). Unlike the prolonged effects from ASA the inhibition of platelet function by ketorolac tromethamine is normalized within 24 to 48 hours after the drug is discontinued. Blood dyscrasias associated with the use of NSAIDs are rare, but could occur with severe consequences.

Infection: In common with other non-steroidal anti-inflammatory drugs, ketorolac tromethamine may mask the usual signs of infection.

DRUG INTERACTIONS

Protein Binding: Toradol (ketorolac tromethamine) is highly bound to human plasma protein (mean 99.2%) and binding is independent of concentration. As ketorolac tromethamine is a highly potent drug and present in low concentrations in plasma, it would not be expected to displace other protein-bound drugs significantly. Therapeutic concentrations of digoxin, warfarin, acetaminophen, phenytoin, and tolbutamide did not alter ketorolac tromethamine protein binding.

Anticoagulant Therapy: Prothrombin time should be carefully monitored in all patients receiving oral anticoagulant therapy concomitantly with ketorolac tromethamine. Toradol IM given with two doses of 5000 U of heparin to 11 healthy volunteers, resulted in a mean template bleeding time of 6.4 min (3.2-11.4 min) compared to a mean of 6.0 min (3.4-7.5 min) for heparin alone and 5.1 min (3.5-8.5 min) for placebo. The *in vitro* binding of warfarin to plasma proteins is only slightly reduced by ketorolac tromethamine (99.5% control vs. 99.3%) at plasma concentrations of 5 to 10 µg/mL.

Digoxin: Ketorolac tromethamine does not alter digoxin protein binding.

Salicylates: *In vitro* studies indicated that, at therapeutic concentrations of salicylates (300 µg/mL), the binding of ketorolac tromethamine was reduced from approximately 99.2% to 97.5% representing a potential two-fold increase in unbound Toradol plasma levels.

Enzyme Induction: There is no evidence, in animal or human studies, that ketorolac tromethamine induces or inhibits the hepatic enzymes capable of metabolizing itself or other drugs. Hence, it would not be expected to alter the pharmacokinetics of other drugs due to enzyme induction or inhibition mechanisms.

Probenecid: Concomitant administration of ketorolac tromethamine and probenecid results in the decreased clearance of ketorolac and a significant increase in ketorolac plasma levels (approximately three-fold increase) and terminal half-life (approximately two-fold increase). The concomitant use of Toradol and probenecid is, therefore, contraindicated.

Furosemide: Ketorolac tromethamine reduces the diuretic response to furosemide by approximately 20% in normovolemic subjects.

Lithium: Some NSAIDs have been reported to inhibit renal lithium clearance, leading to an increase in plasma lithium concentrations and potential lithium toxicity. The effect of ketorolac tromethamine on lithium plasma levels has not been studied.

Methotrexate: The concomitant administration of methotrexate and some NSAIDs has been reported to reduce the clearance of methotrexate, thus enhancing its toxicity. The effect of ketorolac tromethamine on methotrexate clearance has not been studied.

ACE Inhibitors: Concomitant use of ACE inhibitors and other NSAIDs may increase the risk of renal impairment, particularly in volume depleted patients.

Morphine: Intramuscular Toradol has been administered concurrently with morphine in several clinical trials of postoperative pain without evidence of adverse interactions.

**ADVERSE EVENTS
TORADOL TABLETS**

Short-Term Patient Studies

The incidence of adverse reactions in 371 patients receiving multiple 10 mg doses of Toradol (ketorolac tromethamine) for pain resulting from surgery or dental extraction during the post operative period (less than 2 weeks) is listed below. These reactions may or may not be drug related.

Incidence Between 4 and 9%: Nervous System: Somnolence, insomnia. **Digestive System:** Nausea. **Incidence Between 2 and 3%: Nervous System:** Nervousness, headache, dizziness. **Digestive System:** Diarrhea, dyspepsia, gastrointestinal pain, constipation. **Body As A Whole:** Fever. **Incidence 1% or Less: Nervous System:** Abnormal dreams, anxiety, dry mouth, hyperkinesia, paresthesia, increased sweating, euphoria, hallucinations. **Digestive System:** Anorexia, flatulence, vomiting, stomatitis, gastritis, gastrointestinal disorder, sore throat. **Body As A Whole:** Asthenia, pain, back pain. **Cardiovascular System:** Vasodilatation, palpitation, migraine, hypertension. **Respiratory System:** Cough increased, rhinitis, dry nose. **Musculo-skeletal System:** Myalgia, arthralgia. **Skin & Appendages:** Rash, urticaria. **Special Senses:** Blurred vision, ear pain. **Urogenital System:** Dysuria.

Long-Term Patient Study

The adverse reactions listed below were reported to be probably related to study drug in 553 patients receiving long-term oral therapy (approximately 1 year) with Toradol.

Incidence Between 10 and 12%: Digestive System: Dyspepsia, gastrointestinal pain. **Incidence Between 4 and 9%: Digestive System:** Nausea, constipation. **Nervous System:** Headache. **Incidence Between 2 and 3%: Digestive System:** Diarrhea, flatulence, gastrointestinal fullness, peptic ulcers. **Nervous System:** Dizziness, somnolence. **Metabolic/Nutritional Disorder:** Edema. **Incidence 1% or Less: Digestive System:** Eructation, stomatitis, vomiting, anorexia, duodenal ulcer, gastritis, gastrointestinal haemorrhage, increased appetite, melena, mouth ulceration, rectal bleeding, sore mouth. **Nervous System:** Abnormal dreams, anxiety, depression, dry mouth, insomnia, nervousness, paresthesia. **Special Senses:** Tinnitus, taste perversion, abnormal vision, blurred vision, deafness, lacrimation disorder. **Metabolic/Nutritional Disorder:** Weight gain, alkaline phosphatase increase, BUN increased, excessive thirst, generalized edema, hyperuricemia. **Skin & Appendages:** Pruritus, rash, burning sensation skin. **Body as a Whole:** Asthenia, pain, back pain, face edema, hernia. **Musculo-skeletal System:** Arthralgia, myalgia, joint disorder. **Cardiovascular System:** Chest pain, chest pain substernal, migraine. **Respiratory System:** Dyspnea, asthma, epistaxis. **Urogenital System:** Hematuria, increased urinary frequency, oliguria, polyuria. **Hemic & Lymphatic** Anemia, purpura.

TORADOL IM

The adverse reactions listed below were reported in Toradol IM clinical efficacy trials. In these trials patients (N=660) received either single 30 mg doses (N=151) or multiple 30 mg doses (N=509) over a time period of 5 days or less for pain resulting from surgery. These reactions may or may not be drug related.

Incidence Between 10 and 13%: Nervous System: Somnolence. **Digestive System:** Nausea. **Incidence Between 4 and 9%: Nervous System:** Headache. **Digestive System:** Vomiting. **Injection Site:** Injection site pain. **Incidence Between 2 and 3%: Nervous System:** Sweating, dizziness. **Cardiovascular System:** Vasodilatation.

Incidence 1% or Less: Nervous system: Insomnia, increased dry mouth, abnormal dreams, anxiety, depression, paraesthesia, nervousness, paranoid reaction, speech disorder, euphoria, libido increased, excessive thirst, inability to concentrate, stimulation. **Digestive system:** Flatulence, anorexia, constipation, diarrhea, dyspepsia, gastrointestinal fullness, gastrointestinal haemorrhage, gastrointestinal pain, melena, sore throat, liver function abnormalities, rectal bleeding, stomatitis. **Cardiovascular system:** Hypertension, chest pain, tachycardia, haemorrhage, palpitation, pulmonary embolus, syncope, ventricular tachycardia, pallor, flushing. **Injection site:** Injection site reaction. **Body as a Whole:** Asthenia, fever, back pain, chills, pain, neck pain. **Special senses:** Taste perversion, tinnitus, blurred vision, diplopia, retinal haemorrhage. **Musculo-skeletal system:** Myalgia, twitching. **Respiratory system:** Asthma, cough increased, dyspnea, epistaxis, hiccup, rhinitis. **Skin and appendages:** pruritus, rash, subcutaneous hematoma, skin disorder. **Urogenital system:** Dysuria, urinary retention, oliguria, increased urinary frequency, vaginitis. **Metabolic/nutritional disorders:** edema, hypokalemia, hypovolemia. **Hemic and lymphatic system:** Anemia, coagulation disorder, purpura.

Postmarketing Experience

The following postmarketing adverse experiences have been reported for patients who have received either formulation of Toradol: **Renal Events:** Acute renal failure, flank pain with or without haematuria and/or azotemia, nephritis, hyponatremia, hyperkalemia, hemolytic uremic syndrome, urinary retention. **Hypersensitivity reactions:** Bronchospasm, laryngeal edema, asthma, hypotension, flushing, rash, anaphylaxis, and anaphylactoid reactions. Such reactions have occurred in patients with no prior history of hypersensitivity. **Gastrointestinal Events:** Gastrointestinal hemorrhage, peptic ulceration, gastrointestinal perforation, pancreatitis, melena. **Hematologic Events:** Postoperative wound haemorrhage, rarely requiring blood transfusion (see PRECAUTIONS), thrombocytopenia, epistaxis, leukopenia. **Central Nervous System:** Convulsions, abnormal dreams, hallucinations, hyperkinesia, hearing loss, aseptic meningitis, extrapyramidal symptoms. **Hepatic Events:** Hepatitis, liver failure, cholestatic jaundice. **Cardiovascular:** Pulmonary edema, hypotension, flushing. **Dermatology:** Lyell's syndrome, Stevens-Johnson syndrome, exfoliative dermatitis, maculopapular rash, urticaria. **Body as Whole:** infection.

OVERDOSAGE

In a gastroscope study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused pain and peptic ulcers which resolved after discontinuation of dosing. Metabolic acidosis has been reported following intentional overdosage. Single oral doses of 200 mg have been administered to patients with no apparent serious side effects. Dialysis does not appreciably clear ketorolac from the blood stream.

DOSAGE AND ADMINISTRATION

Adults: Dosage should be adjusted according to the severity of the pain and the response of the patient. **Oral:** The usual oral dose of Toradol (ketorolac tromethamine) is 10 mg every 4 to 6 hours for pain as required. Doses exceeding 40 mg per day are not recommended. The maximum duration of treatment with the oral formulation is 5 days for post-surgical patients and 7 days for patients with musculoskeletal pain.

Intramuscular: The recommended usual initial dose is 10-30 mg, according to pain severity. Subsequent dosing may be 10 mg to 30 mg every 4-6 hours as needed to control pain. The lowest effective dose should be administered. The administration of Toradol IM should be limited to short-term therapy (not over 2 days). The total daily dose should not exceed 120 mg because the risk of toxicity appears to increase with longer use at recommended doses (see WARNINGS and PRECAUTIONS). The administration of continuous multiple daily doses of Toradol IM has not been extensively studied. There has been limited experience with intramuscular dosing for more than 3 days since the vast majority of patients have transferred to oral medication or no longer required analgesic therapy after this time.

If supplementary analgesia is required, a concomitant low dose of opiate can be used.

Patients Under 50 kg, Over Age 65 Years, or With Less Severe Pain at Baseline:

Oral: The lowest effective dose is recommended.

Parenteral: The lower end of the dosage range is recommended. The initial dose should be 10 mg. The total daily dose of Toradol IM in the elderly should not exceed 60 mg.

Impaired Renal Function:

Toradol is not recommended for patients with moderate to severe renal impairment.

Conversion from Parenteral to Oral Therapy:

Toradol tablets may be used either as monotherapy or as follow-on therapy to parenteral ketorolac. When Toradol tablets are used as a follow-on therapy to parenteral ketorolac, the total combined daily dose of ketorolac (oral + parenteral) should not exceed 120 mg in younger adult patients or 60 mg in elderly patients on the day the change of formulation is made. On subsequent days, oral dosing should not exceed the recommended daily maximum of 40 mg. Toradol IM should be replaced by an oral analgesic as soon as feasible. The total duration of combined intramuscular and oral treatment should not exceed 5 days.

Parenteral drug products should be inspected visually for particulate material and discoloration prior to use.

Toradol (ketorolac tromethamine) is a Schedule F drug.

Stability and Storage Recommendations

Toradol Tablets: Store at room temperature with protection from light.

Toradol IM: Store at room temperature with protection from light.

Availability of Dosage Forms

Toradol (ketorolac tromethamine) is available as 10 mg white round film coated tablets with one side printed in red with TORADOL inside bold T and other side with Syntex. Toradol (ketorolac tromethamine) 10 mg tablets are available in bottles of 100 and 500 tablets.

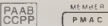
Toradol IM is available in 1 mL ampoules (trays of 10) containing 10 or 30 mg/mL.

Product Monograph available on request.

References: **2.** TORADOL Product Monograph, Syntex Inc., Dec. 1992. **3.** Rooks WH II. *Pharmacother* 1990;10(6 Pt 2):30S-32S. **4.** Yee JP et al. *Pharmacother* 1986; 6(5):253-61. **5.** Brown CR et al. *Pharmacother* 1990; 10(6 Pt 2):45S-50S. **6.** O'Hara DA et al. *Clin Pharmacol Ther* 1987; 41:556-61. **7.** Fragen RJ. Data on File, Syntex Inc., Document CL3837, 1987. **8.** Chery C et al. Data on File, Syntex Inc., Document CL3835, 1987. **9.** Stanski DR et al. *Pharmacother* 1990; 10(6 Pt 2):40S-44S. **10.** Data on File, Syntex Inc., Document #90027-1, 1989. **13.** Stahlgren L. Data on File, Syntex Inc., Document RS-37619, 1991. **16.** Data on File, Syntex, Document #90027-2, 1989. **17.** Forbes JA et al. *Pharmacother* 1990;10(6 Pt 2):77S-93S. **18.** Forbes JA et al. *Pharmacother* 1990; 10(6 Pt 2):94S-105S. **21.** Data on File, Syntex Inc., Document #90027-3, May 1990. **22.** Mehlisch D et al. Data on File, Syntex Inc., Document CL3686, 1986. **23.** Oosterlinck W et al. *J Clin Pharmacol* 1990; 30: 336-41. **24.** Cutting CJ et al. Data on File, Syntex Inc., Document CL4740, 1989. **25.** Diebschlag W and Nocker W. Data on File, Syntex Inc., Document CL5468, 1990. **26.** Molinie J et al. Data on File, Syntex Inc., Document CL4624, 1988. **27.** Herrera JMC et al. Data on File, Syntex Inc., Document CL4886, 1989. **30.** American Pain Society. *Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain*, 3rd edition, 1992. **36.** Hufteaman W et al. Data on File, Syntex Inc., Document CL4882, 1989. **38.** Bloomfield S et al. *Pharmacother* 1986;6(5):247-52. **39.** Sunshine A et al. Data on File, Syntex Inc., Document CL3674, 1986. **46.** Vangen O et al. *J Int Med Res* 1988;16:443-51. **48.** Brown J. *Clin Pharmacol Ther* 1993;53:222. **52.** Cataldo PA et al. *Surg Gynecol Obstet* 1993;176:435-8. **54.** Inklaar H et al. Data on File, Syntex Inc., Document CL3549, 1986. **55.** Yee JP et al. Data on File, Syntex Inc., Document CL3849, 1987. **56.** Tommeraasen M et al. *Surg Forum* 1992;43:510-2. **57.** Steele R and Durwood EN Jr. *South Med J* 1992;85:35-103. **58.** Forrest JB et al. *J Dev Clin Med* 1992;10(3):129-50. **59.** Stahlgren L et al. *Clin Ther* 1993;15(3):570-80. **60.** Launo C et al. *Minerva Anestesiol* 1991;57:1092-3. **61.** Bosek V et al. *J Clin Anesth* 1992;4:480-3. **62.** Fricke J et al. *Clin Ther* 1993; 15(3): 500-507.



Hoffmann-La Roche Limited,
Mississauga, Ontario L5N 6L7



'Roche' and the  are registered Trade Marks owned by Hoffmann-La Roche Limited, Mississauga, Ontario and are used under license. *Registered Trade Mark used under license.

CLINIQUE



La candidiase buccale : diagnostic et traitement pharmacologique

Ngoc Thanh Nguyen, B.Pharm., DMD

Benoît Lalonde, DMD, MSD

SOMMAIRE

La candidiase buccale est la mycose orale la plus fréquente et se manifeste sous plusieurs formes cliniques. Plusieurs facteurs locaux et systémiques favorisent le développement de la candidiase buccale. Le diagnostic de cette infection dépend des signes et symptômes cliniques et également de l'utilisation appropriée des tests diagnostiques. Le choix d'un agent antifongique dépend de la localisation, de la sévérité, de la chronicité des lésions ainsi que de l'état de santé du patient. La candidiase buccale répond généralement bien au traitement pharmacologique. Une candidiase buccale récidivante ou persistante nécessite une évaluation plus approfondie de l'état de santé du patient.

ABSTRACT

Oral candidiasis is the most frequently observed oral mycosis. It can be manifested as a variety of clinical symptoms, and both local and systemic factors may contribute to its development. A confirmation of this infection depends upon the use of appropriate diagnostic tests, in addition to the presence of clinical signs and symptoms. The choice of antifungal agent depends on the location, severity and chronicity of the lesion, as well as the health status of the patient. Oral

candidiasis generally responds well to pharmacological treatment. If the infection is persistent or recurrent, a possible underlying homeostatic disturbance should be investigated.

Introduction

La candidiase buccale est une infection fongique commune chez l'humain. Le *Candida* est un micro-organisme saprophyte de la flore buccale retrouvé, selon certains auteurs, chez 40 p. cent à 60 p. cent des personnes en santé.¹⁻⁷ Des variations importantes (2 p. cent à 71 p. cent) concernant la prévalence du *Candida* chez la population «saine» peuvent être expliquées entre autres par des facteurs tels que la technique de prélèvement, l'échantillonnage et le moment de la prise de l'échantillon.¹ De façon plus conservatrice, Odds¹ suggère plutôt qu'une proportion de la population, variant de 33 p. cent à 50 p. cent, serait considérée comme porteurs sains. Le *Candida albicans* est l'agent causal de la majorité des mycoses orales. La langue est le site prédominant chez les patients dentés et elle est considérée comme un site de réservoir primaire d'où viendrait la colonisation des autres tissus de la cavité buccale.¹⁻⁴

Le *Candida albicans* est une levure polymorphique qui existe

principalement sous forme de blastoconidie et de mycélium.^{1, 2, 8-}

¹⁰ Le mycélium est considéré par certains auteurs comme la forme pathogène du *Candida albicans*⁴⁻⁹ quoique ce concept soit remis en question puisque l'on retrouve l'une ou l'autre forme, i.e., la blastoconidie et le mycélium, dans des sites cliniquement sains et infectés.¹ Par contre, un certain accord existe sur le fait que le mycélium représenterait la forme envahissante initiale de l'infection fongique. La capacité du *Candida albicans* de se différencier entre les formes blastoconidie et mycélium (phenotypic switching) serait une indication plus valable du potentiel pathogénique et infectieux comparativement à la présence du mycélium et/ou du blastoconidie.^{1, 2, 11} De plus, ce phénomène de changement affecterait la sensibilité à la thérapie antifongique.⁸

Aspect clinicopathologique

Pathogénèse

La capacité du *Candida albicans* d'adhérer aux surfaces telles que l'épithélium et l'acrylique est responsable de la colonisation de ce dernier sur la muqueuse buccale et sur les prothèses dentaires.^{1, 2, 8, 10} Une fois adhérent, le *Candida albicans* peut pénétrer la membrane des cellules épithéliales.^{1, 2, 4, 9, 10} Les différents mécanismes de défense contre l'infection fongique



Fig. 1 : Candidiase pseudomembraneuse aiguë. Chez un patient asthmatique utilisant un corticostéroïde en aérosol, on note la présence de plaques pseudomembraneuses blanchâtres qui s'enlèvent à la friction.



Fig. 2 : Candidiase érythémateuse (atrophique) aiguë. Présence de placards rougeâtres au palais dur d'un patient séropositif pour le virus d'immunodéficience humaine (VIH).

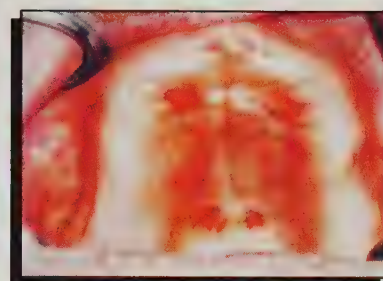


Fig. 3 : Candidiase atrophique chronique type I. Macules rougeâtres et pétéchies localisées situées sur la muqueuse supportant la pièce de prothèse.

incluent la barrière épithéliale, la prolifération et la desquamation de l'épithélium, l'immunité humorale et cellulaire. Au premier rang de ces mécanismes de défense se trouve l'immunité cellulaire.^{1,2,4,9,10} Les infections fongiques dont sont affligés les sidéens démontrent bien l'importance de cette immunité et les conséquences de son altération.^{1,2,4,12-15}

Symptômes

Le patient peut se plaindre d'une sensation de brûlure et/ou d'un goût salé ou métallique désagréable, d'une sensation d'avoir des « plaques » dans la bouche. La douleur est un symptôme occasionnellement rapporté.^{1-4,6,16,17}

Facteurs prédisposants^{1-6,8,9,16,17}

Chez un individu en santé, le système immunitaire et la flore bactérienne gardent le *Candida albicans* sous contrôle. L'altération de cet équilibre peut résulter en une candidiase, de là son qualificatif de « maladie du malade » (disease of the diseased).

Facteurs Physiologiques

La candidiase buccale est fréquente chez les jeunes enfants et les vieillards. Chez les jeunes enfants, la cause la plus probable serait un système immunitaire partiellement développé et une infection initiale causée par la présence vaginale maternelle du *Candida albicans* lors de l'accouchement. De plus, les bébés utilisant une sucette démontreraient deux fois plus d'infections fongiques suggérant l'importance d'une infection exogène.⁸ Quoique l'âge

avancé ne constitue pas un facteur de risque en tant que tel, la malnutrition, l'utilisation de médicaments prédisposants et/ou les maladies débilitantes chez les personnes âgées peuvent en expliquer l'apparition.² Le port de prothèses dentaires expliquerait également cette fréquence plus élevée. Certains auteurs rapportent une incidence plus élevée d'infections fongiques buccales chez les femmes enceintes ainsi que chez celles utilisant des anovulants oraux,^{8,18} quoique aucun consensus ne soit pour l'instant établi à ce sujet.^{1,2}

Facteurs locaux

Une prothèse mal ajustée et/ou une hygiène buccale déficiente, prédisposeraient le patient à une candidiase buccale. Les opinions varient selon lesquelles les habitudes de tabagisme favoriseraient le développement de la candidiase buccale.^{1,2}

Médication

Plusieurs médicaments peuvent prédisposer le patient à une candidiase buccale en altérant la flore bactérienne ou le système de défense.

Les antibiotiques à large spectre, les immunosuppresseurs tels les corticostéroïdes, les agents cytotoxiques sont, entre autres, des agents en cause.

Facteurs systémiques

Les désordres endocriniens (hypothyroïdie, diabète, insuffisance surrénale), les états nutritionnels altérés (déficience en vitamine B, fer, folate, diète riche en hydrates de carbone), les états néoplasiques,¹⁹ le sida sont tous

des facteurs prédisposant à la candidiase buccale.

Xérostomie

Une sécheresse buccale causée par la radiothérapie, la prise de certains médicaments (anticholinergiques, agents cytotoxiques), le syndrome de Sjögren peuvent affecter l'équilibre de la flore buccale ainsi que l'intégrité épithéliale et provoquer une candidiase buccale.

Classification

clinique^{1-5,7,16,20,21}

La candidiase buccale se manifeste sous plusieurs formes cliniques. Différentes classifications ont été suggérées pour décrire les candidiases affectant la cavité buccale. La plus acceptée regroupe les lésions cliniques en trois grandes catégories : les candidiases aiguës, les candidiases chroniques et les candidiases mucocutanées.

Forme aiguë

Candidiase pseudomembraneuse aiguë. (**Fig. 1**) La candidiase pseudomembraneuse aiguë est la forme la plus fréquente des candidiases buccales. Elle est caractérisée par des plaques pseudomembraneuses blanchâtres ou jaunâtres, qui s'enlèvent plus ou moins facilement par grattage, laissant une muqueuse érythémateuse ou hémorragique. Ces plaques pseudomembraneuses sont composées de *Candida*, principalement sous forme d'hyphes, de cellules épithéliales desquamées, de leucocytes, de divers micro-organismes, de tissus nécrotiques, de kératine et de débris alimentaires. Ce type

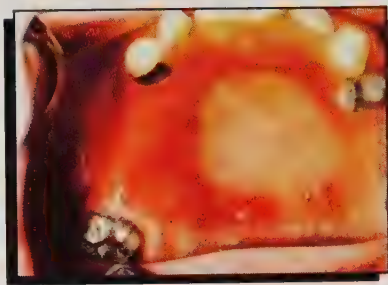


Fig. 4 : Candidiase atrophique chronique type II. Lésion érythémateuse affectant, de façon généralisée, la muqueuse supportant la pièce de prothèse.



Fig. 5 : Candidiase atrophique chronique type III. Lésion érythémateuse localisée accompagnée d'une réaction hyperplasique.

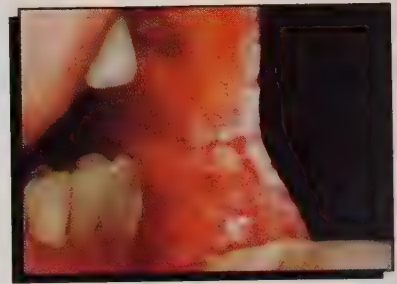


Fig. 6 : Candidiase hyperplasique chronique (candidose leucoplastique). Lésion blanchâtre homogène ne disparaissant pas à la friction et affectant la muqueuse jugale et labiale près de la commissure.

se retrouve entre autres chez les nouveau-nés, les patients atteints du cancer, les patients âgés, les patients sous corticothérapie systémique. La candidiase pseudomembraneuse aiguë est fréquemment associée avec la prise de corticostéroïdes en vaporisateur utilisés pour le traitement de l'asthme. Les sidéens en sont fréquemment affectés, quoique dans cette situation les lésions aient tendance à être chroniques.

Candidiase érythémateuse (atrophique) aiguë (**Fig. 2**). Cette forme de candidiase, caractérisée par des zones rougeâtres, est observée surtout chez les patients sous antibiothérapie, sous corticothérapie systémique, et chez les sidéens. Les sites principalement affectés sont la surface dorsale de la langue et la muqueuse buccale. Elle est probablement la seule forme de candidiase buccale pouvant provoquer une douleur relativement constante.

Forme chronique

Candidiase atrophique chronique ou stomatite prothétique. Caractérisée par un érythème et un oedème sous la prothèse, la stomatite prothétique est d'origine multifactorielle et on la retrouve surtout au maxillaire supérieur. Tel que le propose Newton,²² la stomatite prothétique peut se diviser en trois types :

Type I : Lésions érythémateuses ou pétéchies localisées siégeant sur la muqueuse recouverte par la prothèse. (**Fig. 3**)

Type II : Érythème généralisé de la muqueuse couverte par la prothèse. (**Fig. 4**)

Type III : Inflammation hyperplasique papillaire. (**Fig. 5**)

Dans le cas de la stomatite prothétique de type I, selon Budtz-Jørgensen,²³ les pétéchies seraient reliées à une occlusion des canaux des glandes salivaires mineures plutôt qu'à une infection fongique. Par contre, les types II et III seraient plus directement associés à une infection fongique. Il est à noter que la plaque, prélevée chez les patients avec une stomatite prothétique ainsi que chez les porteurs de prothèses sans lésion évidente, est surtout d'origine bactérienne. Par contre, l'aspect quantitatif du *Candida* chez les patients avec une stomatite est 100 fois plus élevé comparativement aux patients sains.²

Candidiase hyperplasique chronique (Candidiase leucoplastique) (**Fig. 6**). Ayant une incidence accrue chez les fumeurs, elle se caractérise par des plaques blanchâtres fermes et surélevées présentes pour de longues durées. Elles peuvent apparaître sous des formes homogènes ou nodulaires sur fond érythémateux.² Une augmentation significative, dans le degré d'atypie cellulaire et de dégénérescence maligne, est observée dans ces lésions lorsque ces dernières sont comparées aux leucoplasies homogènes idiopathiques. Selon les critères de Cawson et Lehner,²⁴ environ 10 p. cent des leucoplasies sont infectées par le *Candida* et jusqu'à 50 p. cent des candidiases leucoplastiques sont rapportées comme étant dys-

plasiques. Par ordre décroissant, les sites affectés sont les commissures, les joues, le palais et la langue.

Candidiases mucocutanées

Rares et souvent réfractaires au traitement, elle sont caractérisées par une candidiase chronique de la peau et des muqueuses, des ongles et du cuir chevelu. Elles peuvent être localisées, familiales ou reliées à certains syndromes.⁷ Il est à noter que le cancer buccal est une très rare complication des candidiases mucocutanées.²

Autres candidiases orales

Chéilite angulaire ou perlèche (**Fig. 7**). Lésion d'étiologie multifactorielle pouvant représenter une infection fongique primaire ou secondaire. Elle est caractérisée par des fissures au niveau des commissures, révélant des desquamations blanchâtres et des croûtes pouvant être douloureuses. Souvent associée à une diminution de la dimension verticale, elle peut néanmoins être causée par une carence vitaminique, le diabète ou un état d'immunodéficience.

Glossite médiane rhomboïdale (**Fig. 8 et 9**). Lésion de forme ovulaire ou losangique située sur la ligne médiane, antérieure aux papilles circumvallées. La lésion peut être plane ou mamelonée. Ces lésions sont souvent asymptomatiques et répondent mal au traitement, surtout si elles sont présentes de façon chronique.

Relax!

Have you ever laid awake all night worrying about things like the bank deposits? Did the payments match the receivables? Did you forget something? After all, mistakes can happen.

But now, thanks to **CDAnetplus**, you can relax and get a good night's rest. **CDAnetplus** helps you monitor the financial process from day to day. Deposit credit card payments automatically and correct problems

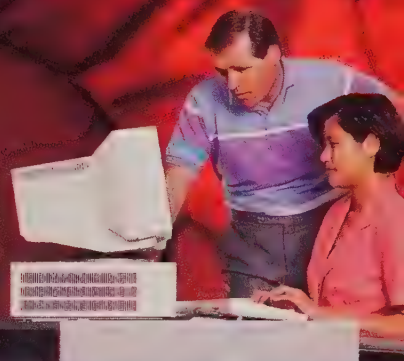
before they occur. That means increased cash flow predictability, greater financial control and complete peace of mind.

CDAnetplus provides the most flexible, up-to-date electronic financial services available.

So relax. Get a fresh start first thing tomorrow. Call 1-800-267-6354 and find out how you can put **CDAnetplus**' leading edge management technology to work for you.



CANADIAN
DENTAL
ASSOCIATION



CDAnetplus

Dentistry's National
Information Network

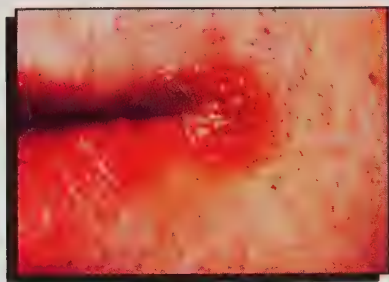


Fig. 7 : Chéilite angulaire ou perlèche. Présence de fissures avec croûtes accompagnées d'un exsudat inflammatoire affectant la commissure labiale.



Fig. 8 : Glossite médiane rhomboïdale. Lésions nodulaires dépourvues de papilles filliformes affectant la zone centrale postérieure de la langue.

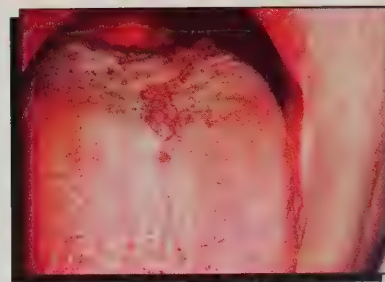


Fig. 9 : Glossite médiane rhomboïdale. Lésion centrale moins exophytique et plus discrète que celle illustrée à la Fig. 8.

La candidiase orale chez les patients sidéens ^{1, 2, 4, 5, 12-15}

La candidiase buccale est un des signes précoces du sida. Le nombre d'unités formatrices de colonie (UFC) augmente à mesure que celui des cellules CD4 diminue. La prévalence de la candidiase buccale varie de 9 p. cent à au-delà de 90 p. cent selon le stade de l'infection au VIH et la population étudiée.¹² Les candidiases érythémateuse, pseudomembraneuse, et la chéilite angulaire sont les plus souvent rencontrées chez les patients infectés par le VIH. La forme pseudomembraneuse, qui est normalement de nature aiguë, peut, chez les patients infectés par le VIH, persister plusieurs mois si elle n'est pas traitée. La présence de candidiase buccale, chez un adulte en santé sans facteur prédisposant, doit attirer l'attention du clinicien sur la possibilité d'une immunosuppression systémique.

Diagnostic ^{1-4, 9, 17, 18, 25, 26}

Le diagnostic de la candidiase buccale est habituellement fait après avoir pris en considération les signes et symptômes cliniques, le résultat des tests de laboratoire et, éventuellement, l'état de santé du patient. De façon plus spécifique, l'approche diagnostique devrait se baser sur les observations suivantes :

1. La présence de changements cliniques consistants avec une candidiase buccale.
2. La présence en quantité importante de mycélium sur les frottis prélevés de la lésion.
3. Une production significative de *Candida* provenant de culture

d'échantillons prélevés du site impliqué.

Le frottis peut être préparé avec une solution KOH 10 p. cent ou coloré avec la coloration de Gram ou P.A.S.. Certains tests diagnostiques commercialement disponibles semblent démontrer une spécificité et une sensibilité adéquates.^{2, 18, 26} Néanmoins, il est important de se rappeler que les techniques de culture utilisées seules ont peu de valeur; un résultat positif sans signes et symptômes cliniques n'impliquant pas nécessairement une infection fongique.

Autres tests

La biopsie est essentielle dans le diagnostic des lésions blanches persistantes quand on soupçonne une candidiase hyperplasique, puisque les observations cliniques sont insuffisantes pour finaliser un diagnostic. Afin d'éliminer tout état de santé prédisposant, certaines épreuves de laboratoire devraient être considérées. De plus, d'autres tests tels que la culture par empreinte (imprint culture), la culture par lavage buccal (oral rinse culture), le titrage des anticorps salivaires ou sériques, sont disponibles mais généralement réservés aux études cliniques.² Cependant, d'un point de vue pratique, la candidiase buccale est souvent traitée de façon empirique; une réponse favorable pouvant confirmer le diagnostic clinique provisoire.

Le traitement pharmacologique de la candidiase buccale ^{1, 2, 6, 8, 16-18, 25, 27-35}

Une fois le diagnostic établi, le succès du traitement de la candidiase buccale sera modulé par des

facteurs tels que l'identification et le traitement des conditions systémiques sous-jacentes, l'élimination des facteurs prédisposants locaux et la thérapie antifongique utilisée. La candidiase buccale répond habituellement bien au traitement pharmacologique et cesse une fois la flore buccale rétablie. Les formulations topiques sont disponibles sous formes de suspension orale, de comprimés oraux, de crème, de comprimés et de suppositoires vaginaux. La suspension orale ne représente pas le traitement idéal à cause du temps de contact inadéquat entre la muqueuse infectée et le médicament. De plus, cette formulation contient du sucrose en quantité significative, ce qui représente un risque de développement de caries dentaires chez les patients xérostomiques. L'antifongique en crème constitue le véhicule idéal pour le traitement des stomatites prothétiques ainsi que de la chéilite angulaire. Il est important de prolonger le traitement au-delà de la disparition des signes et symptômes cliniques et, par conséquent, de traiter l'infection fongique pendant au moins deux semaines.

On retrouve trois grandes classes principales d'agents antifongiques : les polyènes, les azoles, et les désinfectants.

Les polyènes

Les polyènes exercent leur activité antifongique probablement en se liant aux stérols de la membrane cellulaire et produisent un changement de la perméabilité, ce qui résulte en une perte des principaux constituants cellulaires.

- Who really pays for "2.9%"?
- How much does "free" air conditioning cost?
- Where can I get a straight answer?

How much ya wanna spend?

Make me an offer!

I can get you 2.9% today!

CDA Leasing... Straight Answers To Your Questions

CDA members enjoy substantial savings on new vehicles through our CDA Leasing program. Hundreds of members have taken advantage of this significant CDA Membership service since we introduced it in 1990, obtaining one or more new vehicles. CDA Leasing guarantees you the **best leasing value** in the marketplace.

We can help dispose of your existing vehicle. Lease documents are simple and straight forward, and financial terms can be tailored to meet your requirements. You can drive with no kilometer restrictions. We are here to serve you.

Please give us a call. **1-800-461-2923**



CDA LEASING

7100 Woodbine Ave., Suite 400, Markham, Ontario L3R 5J2 Telephone: (905) 477-5210, Toll-Free 1-800-461-2923

LES JOURNÉES DENTAIRE DU QUÉBEC, 1995

24th Annual Meeting of the Ordre des Dentistes du Québec

MAY 27 through MAY 31, 1995

Pre-Convention — Meridien Hotel — Saturday and Sunday

Congress — Montreal Convention Centre — Monday to Wednesday

Dentistry: A Patient Oriented Profession

This year's theme emphasizes the need of the dental team to treat the patient as a whole and to care and respond to his or her needs.

- Four stress management courses broadcast on closed-circuit television
- 10 full-day and five half-day participation/hands-on workshops
- 25 table clinics by dentists, hygienists, assistants, technicians and students
- over 20 full-day and 40 half-day lectures over the five day meeting
- three full days of exhibits with more than 225 exhibitors on a new and expanded exhibit floor

For more information and a preliminary program, please contact:

Les Journées dentaires du Québec

625, boul. René Lévesque West, 15th floor

Montréal, Québec, H3B 1R2

Telephone: 514-875-8511 or Fax 514-875-1561



Nystatine

La nystatine n'est pas absorbée par le tractus gastro-intestinal ne causant pas d'effet systémique. La posologie recommandée est 5 ml (100 000 Unités/ml, en suspension) qid pour 10 à 14 jours ou 1 comprimé vaginal (100 000U/co) qid pour 10 à 14 jours. L'utilisation des comprimés vaginaux augmente la durée de contact entre le médicament et la muqueuse buccale.

Amphotéricine B

Le traitement topique semble efficace mais n'est présentement pas disponible en Amérique du Nord. L'amphotéricine B est indiquée pour la candidiase profonde et les candidiases buccales qui ne répondent pas aux autres traitements pharmacologiques. Elle peut être utilisée seule ou en association avec la flucytosine. Cet agent doit être administré en I.V., la durée du traitement variant de 4 à 12 semaines. L'amphotéricine B peut causer une réaction aiguë chez plusieurs patients après les premières doses (fièvre, rigidité, hypotension, tachypnée). À cause des effets secondaires sérieux, son utilisation systémique ne doit être administrée qu'aux patients hospitalisés et sous étroite supervision médicale.

Les azoles

Les azoles exercent leur mécanisme d'action en inhibant la synthèse de l'ergostérol, composante essentielle de la membrane cellulaire fongique. Les azoles se divisent en deux catégories; les imidazoles et les triazoles.

Les imidazoles

Clotrimazole

Cet agent, efficace contre la candidiase buccale, n'existe pas au Canada en formulation pour utilisation intra-orale. Le clotrimazole possède des propriétés anti-staphyloccociques ce qui le rend un agent intéressant pour le traitement des chéilites angulaires. La posologie est de 1 comprimé vaginal (100mg/co) bid pour 10 à 14 jours ou la crème 1 p. cent en application locale bid. Chez les pa-

tients atteints du sida, on recommande un comprimé vaginal qid pour 10 à 14 jours. Chez les patients atteints de maladies hépatiques, le clotrimazole doit être utilisé avec prudence.

Miconazole

En plus de son action antifongique, cet agent topique possède également des propriétés antistaphyloccociques. Une étude récente suggère son utilisation sous forme de vernis en application dans la prothèse dentaire pour le traitement de stomatite prothétique d'origine fongique.³⁵ Il est absorbé systématiquement de façon très limitée lorsque appliqué topiquement.

Kétoconazole

Absorbé de façon significative par le tractus gastro-intestinal, le kétoconazole est utilisé lorsque les agents topiques ne sont pas efficaces pour traiter la candidiase buccale. Contrairement aux autres azoles décrits auparavant, il ne possède pas d'activité antibactérienne. La posologie est 200 mg qd pour 14 jours. Le kétoconazole peut causer plusieurs effets secondaires tels que nausée, vomissement, anorexie, et peut également causer des réactions hépatotoxiques variant de légères jusqu'à la nécrose. Son utilisation à long terme doit donc s'accompagner d'un suivi de la fonction hépatique. À cause d'une affinité marquée pour le système cytochrome P450, le kétoconazole interfère avec plusieurs médicaments dont les plus connus sont les antihistaminiques terféndine (Seldane) et astémizole (Hismanal), ce qui en contre-indique leur utilisation simultanée.

Les triazoles

Fluconazole

Cet agent possède une excellente absorption et démontre une très longue demi-vie plasmatique. Le fluconazole est un dérivé des triazoles récemment introduit au Canada comme agent antifongique. Il peut être administré par voie orale ou I.V. Par la voie orale, le fluconazole est mieux absorbé que le kétoconazole et n'est

influencé de façon significative que par la variation du pH gastrique. Dans le traitement des candidiases buccales, le fluconazole est aussi efficace ou supérieur que le kétoconazole. La posologie habituellement recommandée est 200 mg le premier jour, puis 100 mg qd pour 14 jours. Les études rapportent que le fluconazole est moins toxique que l'amphotéricine B et mieux toléré que le kétoconazole. Rarement, on observe une élévation des enzymes hépatiques. Apparemment, le fluconazole possède une affinité moins marquée pour le système cytochrome P450 que le kétoconazole. À la lumière des recherches actuelles, le fluconazole est une autre solution valable dans le traitement des candidiases buccales résistantes à la thérapie habituelle ou chez les patients dont l'absorption du kétoconazole est diminuée.

Itraconazole

L'itraconazole est un dérivé des triazoles introduit au Canada depuis septembre 1993. Dans les études in vitro et in vivo, il est 5 à 100 fois plus actif que le kétoconazole. L'efficacité de l'itraconazole a été démontrée dans le traitement des mycoses superficielles y compris la candidiase buccale. La posologie recommandée est de 100 mg qd pour 14 jours chez les patients immunocompétents, et de 200 mg qd pour 14 jours chez les sidéens et les neutropéniques. Une élévation asymptomatique des enzymes hépatiques a été rapportée dans moins de 5 p. cent des cas. À noter que l'itraconazole a été administré avec succès chez quelques patients ayant des antécédents d'hépatotoxicité avec le kétoconazole ou l'amphotéricine B. L'itraconazole possède peu d'affinité pour le système cytochrome P450. Son profil d'interaction médicamenteuse est semblable au fluconazole et il ne devrait pas être administré chez les patients ayant utilisé la terféndine ou l'astémizole. À l'heure actuelle, cet agent est une autre solution valable chez les patients ne répondant pas aux thérapies usuelles.

Désinfectants

Chlorhexidine

La chlorhexidine possède des propriétés antibactériennes et antifongiques. Elle exerce son action en augmentant la perméabilité cellulaire, entraînant ainsi une précipitation des constituants cytoplasmiques. La chlorhexidine est utilisée comme adjuvant dans le traitement des candidiases buccales. En rince-bouche, elle peut être utilisée pour le traitement des candidiases buccales. Elle est également utilisée comme agent prophylactique chez les patients immunosupprimés. Quoique la chlorhexidine n'est pas absorbée par le tractus gastro-intestinal, ses principaux effets secondaires sont une dysgueusie temporaire et une coloration extrinsèque des dents.

Autres agents antifongiques

Flucytosine

Elle est rarement utilisée seule à cause d'une résistance qui se développe rapidement. La flucytosine, en association avec l'amphotéricine B est efficace dans le traitement des candidiases. Cette association peut causer des effets secondaires sérieux comme l'entérococolite ou la leucopénie.

Griséofulvine

Cet agent antifongique, à utilisation systémique, est indiqué pour les infections fongiques superficielles en plus d'être utilisé pour le traitement de candidiase mucocutanée.⁶ Par contre, Odds¹ rapporte que, quoique efficace pour le traitement des dermatophytoses, cet agent serait essentiellement inactif contre le *Candida* et, par conséquent, inadéquat pour le traitement des candidiases buccales.

Clioquinol

Cet agent topique possède des propriétés antifongiques et antibactériennes. Dans le traitement des candidiases buccales, l'utilisation du clioquinol est limitée au traitement des chéilites angulaires et il ne peut être appliqué en intra-oral à cause d'une absorption systémique possible et peut provoquer une augmentation du taux de l'iodémie protéique.

Violet de Gentian

Cet agent est beaucoup moins efficace que ceux nommés précédemment et la décoloration des muqueuses buccales rend difficile le suivi de l'évolution des lésions fongiques. Le violet de Gentian n'est plus conseillé dans le traitement des candidiases buccales puisque de meilleurs agents thérapeutiques sont disponibles.

Traitement des candidiases buccales chez les patients sidéens^{1-3, 6, 12-15, 36-39}

Comme on l'a mentionné plus tôt, la candidiase buccale est l'infection fongique la plus fréquente chez les patients sidéens. Un traitement précoce est souhaitable pour soulager les symptômes et éviter la progression des infections. Généralement, les antifongiques topiques (nystatine, clotrimazole) sont relativement efficaces pour traiter les premiers épisodes de candidiases buccales et des rechutes. Un système topique à libération lente (Mucosal Oral Therapeutic System ou MOTS-nystatin) aurait démontré une efficacité adéquate.³⁹ Cependant, avec la progression du sida, les candidiases deviennent sévères et l'efficacité des agents topiques est diminuée. Lorsque le traitement antifongique systémique s'impose, on suggère l'utilisation du kétoconazole. Cependant, ce choix est de plus en plus remis en question car l'absorption du kétoconazole est limitée à cause d'une altération du pH gastrique chez les sidéens. De plus, le kétoconazole cause plusieurs effets secondaires et interactions médicamenteuses. Le fluconazole ou l'itraconazole à cet égard semblent supérieurs au kétoconazole. L'itraconazole peut être utilisé chez les patients souffrant d'insuffisance rénale et ceux qui ont des antécédents d'hépatotoxicité avec le kétoconazole. Cependant, le coût très élevé du fluconazole et de l'itraconazole limite leur utilisation. L'amphotéricine B seule ou en association avec la flucytosine est utilisée si la candidiase buccale résiste aux agents antifongiques déjà nommés. En ce qui concerne la prophylaxie des myco-

ses orales chez les patients immunosupprimés, la chlorhexidine en rince-bouche a été utilisée avec succès dans le cadre de plusieurs études cliniques.

Conclusion

La candidiase buccale répond habituellement bien au traitement pharmacologique. La majorité des signes et symptômes s'améliorent après quelques jours de traitement et une guérison complète est normalement obtenue après 10 à 14 jours. En présence de lésions persistantes, des investigations plus poussées telles que la biopsie sont nécessaires pour détecter d'autres lésions sous-jacentes possibles, e.g., leucoplasie idiopathique, lichen plan. Dans le cas de fréquentes rechutes après une thérapie antifongique adéquate, le patient doit être référé pour une évaluation médicale afin de détecter la présence possible de maladies systémiques telles que des désordres endocriniens ou d'une déficience immunologique. ■

Remerciements : Nous aimerions remercier la Dre Noëlla Deslauriers du Groupe de Recherche en Écologie Buccale (G.R.E.B.) de l'Université Laval pour son aide précieuse dans la révision du document.

Le D^r Ngoc Thanh Nguyen est diplômé en pharmacie, et dentiste en pratique privée.

Le D^r Benoît Lalonde est professeur adjoint, faculté de médecine dentaire, Université de Montréal. Il est spécialiste en médecine buccale.

Références

1. Odds, F.C. *Candida and candidosis*, ed 2, London, Baillière Tindall, 1988.
2. Samaranayake, L.P. and MacFarlane, T.W. *Oral candidosis*, London, Wright, 1990.
3. Fotos, P. G., Vincent, S. D. and Hellstein, J. W. Oral Candidosis: clinical, historical, and therapeutic features of 100 cases. *Oral Surg Oral Med Oral Pathol* 74:41-9, 1992.
4. Reichl, R. B. Oral Candidiasis: An old disease of growing concern. *Gen Dent* 38(2):114-20, 1990.
5. Samaranayake, L. P. and Lamey, P. J. Oral candidosis: 1. Clinicopathological aspects. *Dent Update* 15(6):227-31, 1988.
6. Epstein, J. B. Antifungal therapy in oropharyngeal mycotic infections. *Oral*



Don't burden your family with the decision

You should make an informed choice about organ and tissue donation and communicate it to your family in case a tragic event occurs.

CCODA The Canadian Coalition on
Organ Donor Awareness

- Surg Oral Med Oral Pathol* 69:32-41, 1990.
7. Lynch, D.P. Oral candidiasis: History, classification and clinical presentation, *Oral Surg Oral Med Oral Pathol* 78:189-93, 1994.
 8. Fotos, P. G., Hellstein, J. and Vincent, S. Oral candidosis revisited. *Gen Dent* 36(6):422-30, 1991.
 9. Iacopino, A. M. and Wathen, W. F. Oral candidal infection and denture stomatitis: A comprehensive review. *JADA* 123(1):26-41, 1992.
 10. Howlett, J. A. and Squier, C.A. Candida albicans ultrastructure: Colonization and invasion of oral epithelium. *Infect Immun* 29(1):252-260, 1980.
 11. Soll, D.R. et al. Developmental and molecular biology of switching in Candida albicans. *Oral Surg Oral Med Oral Pathol* 78:194-201, 1994.
 12. Greenspan, D. Treatment of oral candidiasis in HIV infection. *Oral Surg Oral Med Oral Pathol* 78:211-5, 1994.
 13. Samaranayake, L. P. Oral mycoses in HIV infection. *Oral Surg Oral Med Oral Pathol* 73(2):171-80, 1992.
 14. Heimdahl, A. and Nord, C. E. Oral yeast infections in immunocompromised and seriously diseased patients. *Acta Odontol Scand* 48:77-84, 1990.
 15. Scully, C. Oral infections in the immunocompromised patient. *Br Dent J* 172:401-07, 1992.
 16. Jeganathan, S. and Chew, C. L. Denture stomatitis - a review of the aetiology, diagnosis and management. *Aust Dent J* 37(2):107-14, 1992.
 17. Allen, C. M. Oral candidiasis: diagnosing and managing. *JADA* 123(1):77-82, 1992.
 18. Awde, J.D. and Kogon, S.L. Clotrimazole troche (BAY b5097) in the treatment of oropharyngeal candidiasis and the evaluation of the test-strip, Microstixandida. *JCDA* 59:527-30, 1986.
 19. Pérusse, R. Oral candidiasis and multiple myeloma: an unusual presentation. *Oral Surg Oral Med Oral Pathol*, 78:264-6, 1994.
 20. Laskaris, G. *Color atlas of oral diseases*. ed. 2, New-York, Thieme Medical Publishers, 1994.
 21. Eversole, L.R. *Clinical outline of oral pathology: diagnosis and treatment*. ed. 3, Philadelphia, Lea & Febiger, 1992.
 22. Newton, A.V. Denture sore mouth. *Br Dent J* 112:357-360, 1962.
 23. Budtz-Jørgensen, E. Denture stomatitis. IV. An experimental model in monkeys. *Acta Odontol Scand*, 29:513-26, 1971.
 24. Cawson, R.A. and Lehner, T. Chronic hyperplastic candidosis - candidal leukoplakia. *Brit J Dermatology*, 80:9-16, 1968.
 25. Lamey, P. J. and Samaranayake, L. P. Oral candidosis: 2. Diagnosis and management. *Dent Update* 15(8):328-31, 1988.
 26. Axéll, T., Simonsson, T., Birkhed, D. et al. Evaluation of a simplified diagnostic aid (Oricult-N) for detection of oral candidoses. *Scand J Dent Res*, 93:52-5, 1985.
 27. Goodman-Gilman, A., Rall, T.W., Nies, A.S. et al. *Goodman and Gilman's-The pharmacological basis of therapeutics*, ed 8, New-York, Pergamon Press, 1990.
 28. Barriere, S. L. Pharmacology and pharmacokinetics of traditional systemic antifungal agents. *Pharmacotherapy* 10(Suppl 6):134S-140S, 1990.
 29. Anonyme. Médicaments pour le traitement des mycoses. *La lettre médicale* 12:110-112, 1992.
 30. Bodey, G. P. Azole antifungal agents. *Clin Inf Dis* 14(Suppl 1):S161-9, 1992.
 31. Brouillette, F. Fluconazole (Diflucan). *Québec Pharmacie* 38:171-174, 1991.
 32. Anonyme. Fluconazole. *Med Let Drugs Ther* 32:50-52, 1990.
 33. Goyette, S. L'itraconazole (Sporanox). *Québec Pharmacie* 41(1):23-29, 1994.
 34. Bissell, V., Felix, D.H. and Wray, D. Comparative trial of fluconazole and amphotericin in the treatment of denture stomatitis. *Oral Surg Oral Med Oral Pathol* 76:35-9, 1993.
 35. Könsberg, R. and Axéll, T. Treatment of Candida - infected denture stomatitis with a miconazole lacquer. *Oral Surg Oral Med Oral Pathol* 78:306-11, 1994.
 36. Anonyme. Les infections fongiques chez les personnes infectées par le VIH. *Information médicament* No 3, 1991.
 37. Bergeron, L et St-Pierre, L. Les complications infectieuses de l'infection au VIH. *Québec Pharmacie* 40:203-213, 1993.
 38. British Society For Antimicrobial Chemotherapy Working Party. Antifungal chemotherapy in patients with acquired immunodeficiency syndrome. *Lancet* 340(8820):648-51, 1992.
 39. Greenspan, D. et al. MOTS-Nystatin for treatment of oral candidiasis in HIV infection. *J Dent Res* 71:172, 1992.

Response to letter to the editor ... continued from page 277

Dr. Minna H. Stein, deputy registrar of the Royal College of Dental Surgeons of Ontario, has drawn your attention to the assertion, as stated in "AIDS and Discrimination: The Windsor Case," that Dr. Paul DeMarco had to defend himself at "both the RCDS Discipline Committee and the Ontario Health Disciplines Board." This statement, as Dr. Stein points out, is erroneous.

In truth, Dr. DeMarco's experience before the RCDS was as follows:

1. In December 1990, Dr. DeMarco appeared before a three-person panel, constituting a complaints committee of the college, to defend himself against charges made by Mr.

Jerome in a written complaint to the college dated April 2, 1990.

2. Having heard from Dr. DeMarco, and having completed its investigation, the complaints committee of the college concluded that Mr. Jerome's complaint would not be referred to the discipline committee.
3. Dissatisfied with the decision of the complaints committee, Mr. Jerome requested a review by the Health Disciplines Board.
4. The Health Disciplines Board, chaired by B. Harry Barrett, undertook the review on May 28, 1992. Dr. DeMarco, having already expended significant sums in legal fees and travel and related expenses to defend himself before the complaints committee and the Human Rights Commission, declined to appear in person before the board,

but instructed counsel to make written submissions on his behalf.

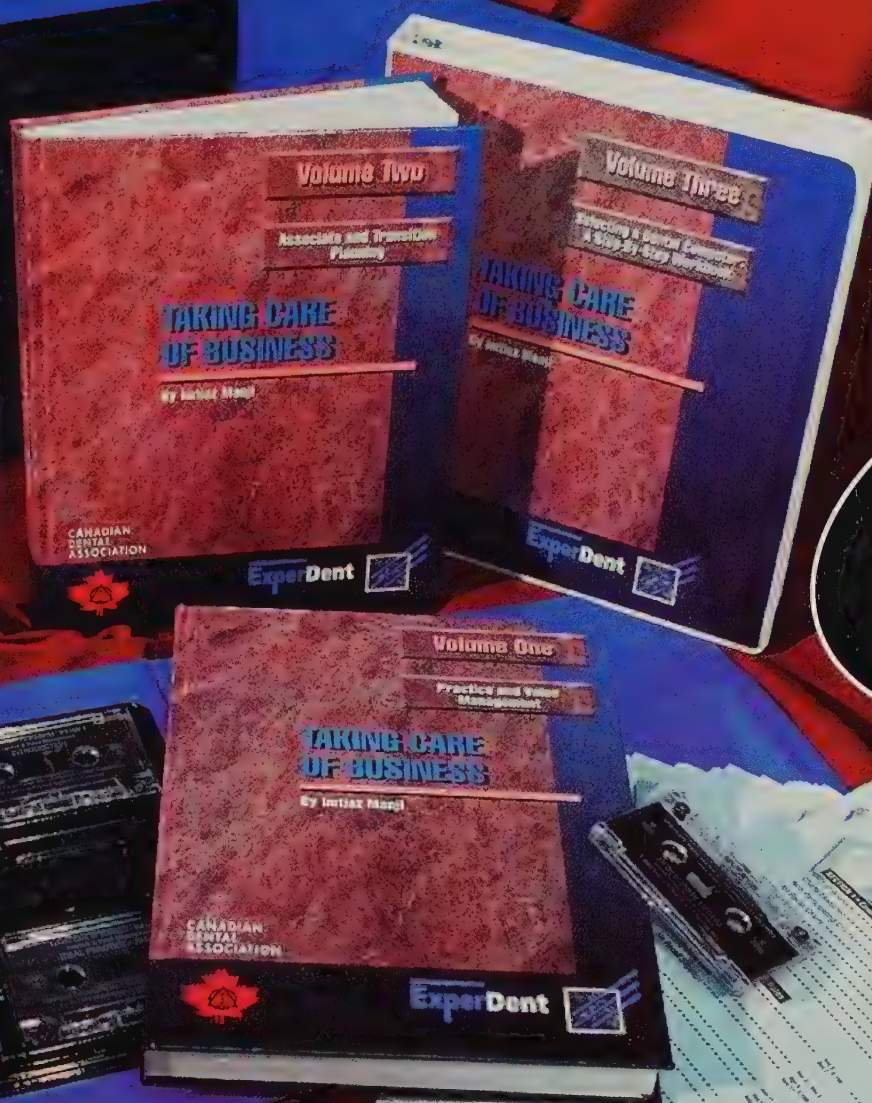
5. On June 22, 1992, the board delivered its written decision and reasons, confirming the decision of the complaints committee and finding that "there was no information to suggest discrimination on Dr. DeMarco's behalf."

So Dr. Stein is correct to point out that Dr. DeMarco did not have to defend himself before the RCDS's discipline committee. Rather, he had to appear and defend himself before the RCDS's complaints committee and he had to defend himself before the Ontario Health Disciplines Board.

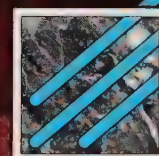
Edward W. Ducharme
Gignac, Sutts, Barristers and Solicitors



The Canadian Dental Association Taking Care of Business



**“Developed in
partnership with
CDA by ExperDent
Consultants.”**



See next page for more details...

Over two years in development by the Canadian Dental Association in partnership with ExperDent Consultants, ***Taking Care of Business*** is the most extensive project in practice management that the CDA has ever undertaken. We went to the experts in Canadian dental practice management to bring you the most up-to-date and thorough practice management materials available anywhere in North America!

- Why practice value is important
- Understanding your practice's potential
- How to develop a financial plan
- Examining your break even point
- Patient management & recall strategies
- Case management & treatment acceptance
- Collections & payment control techniques
- **260 pages plus worksheets and cassettes**

- Overview of major management systems
- Overview of major career stages
- Personal and practice budgeting
- Setting realistic goals for practice growth
- Marketing & growth strategies
- Scheduling & appointing strategies
- Introduction to practice transitions

- Key management areas for dentists
- Why growth stops for most dentists
- Transition choices for new dentists
- Negotiating successful associateships
- Designing and building a dental practice
- Compensation plans for associates
- Factors in sale/purchase transactions
- **300 pages plus cassettes**
- The dental career cycle
- Factors in retirement planning
- Starting a new practice
- Negotiating successful partnerships
- Key factors in legal agreements
- Practice valuation methods
- Managing staff & patients during transitions

- Preventing costly mistakes
- Why computerizing is important
- Review of the basics
- How to evaluate the options
- Understanding operating system environments
- Evaluating support and maintenance
- **150 pages plus worksheets**

- Uncovering hidden costs
- How to choose a vendor
- Learn about purchase contracts
- Hardware & software needs
- Installation and training
- Getting comfortable with the language

TOTAL \$

Member	Regular	Total
\$200	\$300	
\$150	\$250	
\$140	\$190	

Shipping & Handling
 per volume ordered

Subtotal

al (#R106845209)

total (Ontario only)

TOTAL \$

CDA Access Ads

CDA ACCESS ADS offer guaranteed access to Canada's largest audience of dentists. To place your ad, call **Neil McGillivray** toll-free across the country at **(800) 661-5004**. In the Toronto calling area, please dial **(905) 278-6700**.

Replying to a CDA Access Box Number? Simply write to:
CDA Access Box ____,
1382 Hurontario St.,
Mississauga, Ont. L5G 3H4.
Or you may fax your reply to (905) 278-4850, noting the appropriate box number.

Offices & Practices

BRITISH COLUMBIA - Nanaimo: Exceptional opportunity/location for sale - First-class dental office in busy major shopping centre, five operatories, high new patient flow, great history and even better future expected. Located in Nanaimo, B.C., one of the fastest growing cities in Canada, with a great recreational environment on the ocean. Call (604) 756-1200 day or (604) 756-1082 evenings. (04/04)

BRITISH COLUMBIA - Trail: Established family practice in stable industrial economy with superb recreational opportunities. Prime location. Low overhead. Modern equipment. Owner retiring. Phone (604) 362-9426 (evenings). (06/13)

BRITISH COLUMBIA - Lower Mainland: Pacific flyway for sale. Profitable, well-established, health-centred, non-traditional general practice opportunity with crown and bridge emphasis. Here the famous visitors are snow geese travelling between the Arctic and South America. The municipality offers some of the best quality of life in British Columbia. Please respond with curriculum vitae and written vision of your preferred future to CDA ACCESS Box # 2652. (12/04)

BRITISH COLUMBIA - Victoria: The charm, the people, the weather and the economy. This computerized practice with panorex and all modern equipment grosses over \$360,000, and growing, with a solo practitioner, four days a week. The owner is going back to school. Great opportunity, will not last. Reply to CDA ACCESS Box 2664. (04/06)

BRITISH COLUMBIA Burnaby

For sale, busy, well established family practice. Low overhead, 30-40 new patients per month, owner relocating to Kelowna. Price \$170,000.

Call **(604) 879-7596**
or reply to

CDA ACCESS Box # 2658. (02/04)

BRITISH COLUMBIA Fraser Valley

Profitable, modern, well established practice in beautiful facility. Country living with easy access to big city amenities. \$600,000 Gross - 4 day week.

Message/Fax: **(604) 852-9420**
or reply to

CDA ACCESS Box # 2659. (02/04)

BRITISH COLUMBIA East Vancouver

For sale, established family/general practice. Dentist wants to retire by early 1995. Excellent patient flow. Eight-year-old practice with three operatories. \$400,000 gross with low overhead. Contact:

Bing C. Wong & Associates Ent. Ltd.
(604) 682-7561. (12/04)

FOR INFORMATION ON B.C. DENTAL PRACTICES FOR SALE CALL

Health Pro Realty Ltd.

(604) 538-7838

Suite #239 - 1959 152nd Street,
White Rock, B.C. V4A 9E3

ALBERTA - Edmonton: For sale! Thriving practice, up-market location. Strong existing revenue flow. Computerized, Pan, four ops, plus. Owner returning for postgraduate training and will assist in transition. Phone (403) 452-5700 Tuesday to Friday. (03/04)

ALBERTA Edmonton Area

Well established rural practice. Computerized, progressive office in growing community. Excellent health and recreational facilities. Reply to **CDA ACCESS Box # 2665.** (04/13)

SASKATCHEWAN - Moosomin: Practice for sale. Owner of an exceptional dental practice in Moosomin Saskatchewan has recently passed away. An excellent experienced staff in place; presently being operated by a locum. Practice consists of seven operatories, five fully equipped. High gross and net figures with low asking price, represents an excellent buying opportunity. Phone Rick (306) 646-4540. (04/13)

SASKATCHEWAN

Practice for sale or Locum Required

Moderate income practice for sale, all new equipment. Progressive surroundings.

Please reply to
CDA ACCESS Box # 2645. (11/13)

MANITOBA - South Central Region: General practice for sale. Comfortable driving distance from Winnipeg. High gross, reasonable overhead, diverse workload, Pan/ceph equipped. Please reply to CDA ACCESS Box # 2660. (02/04)

ONTARIO - Windsor: Well established family practice for sale.

Modern state-of-the-art equipment. Four ops., pan, high gross, booming economy, 90% of patients are insured, excellent location. Reply to CDA ACCESS Box # 2666. (04/04)

ONTARIO - Northwestern Region: Busy dental practice for sale. Three operatories with fully modern equipment, low overhead, 90% insurance, grossing over \$500,000. Excellent staff with full-time hygienist and strong recall base. Practice would be able to support associate also. Ideal for the outdoor enthusiast (boating, hiking, fishing). Please reply to CDA ACCESS Box # 2670. (04/06)

DENTAL OFFICE SPACE
Lindsay, Ontario

Modern, newly decorated dental office in downtown. 750 sq. ft. ground floor.

Fully plumbed and wired. A dental office for more than 25 years. Available April 1st, 1995. An excellent opportunity to start a practice in a progressive town.

Phone (705) 324-6196. (03/04)

NOVA SCOTIA - Springhill: For sale - well established family practice. Two newly equipped operatories plus hygiene and pan, located in modern cost-sharing clinic. Good gross; existing overhead 50%. Supportive staff; stable economy. Close to ocean beaches, downhill and cross-country skiing, and outdoor recreation. Central Maritimes. Contact Bill Tingley at (902) 835-1103 or within Maritimes 1-800-565-1502. (04/06)

NOVA SCOTIA: Halifax: For Sale: a growing dental practice located in a high-income suburb of Halifax. Low rent and overhead expenses. A-dec equipment. Visible location. Patient flow is rapidly increasing. High patient retention. An excellent opportunity for a specialist who wants to have his/her own practice or for a general dentist looking for a growing patient-oriented practice. Call: (902) 835-3005. (03/04)

Professional Services

CHARTERED ACCOUNTANT

Let me assist you as your
Business Advisor.

Financial statements, tax planning, business and loan proposals, general business consultation. Eager to provide high quality, friendly service at reasonable rates. Call:

(416) 282-4240 for quotations. (11/13)

**ACCOUNTING & TAX SERVICES
FOR B.C. DENTAL PRACTICES**

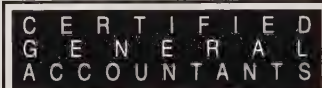
- Incorporations
- Buying/Selling
- Family Trusts

300 - 2000 West 12th Avenue
Vancouver, B.C. V6J 2G2
(604) 736-6581



**MCCONNELL
GALLOWAY
BOTTESELLE**

National Affiliate
Porter Hétu



**I
C
G** **INTERIOR
CO-ORDINATED
GROUP**

**DESIGN-DEVELOPERS-FACILITATORS
PROFESSIONAL CONSULTANTS SINCE 1973**

- | | |
|----------------------|-----------------------------|
| * PREMISE LOCATIONS | * BUDGET ESTIMATING |
| * LEASE NEGOTIATIONS | * PROJECT MANAGEMENT |
| * PRELIMINARY PLANS | * WHOLESALE PURCHASING |
| * WORKING DRAWINGS | * PURCHASE OR SELL PRACTICE |

We at **INTERIOR CO-ORDINATED GROUP** specialize in premise and lease negotiations, design, renovations, construction, and assistance with the **Purchasing** and **Sales** of dental facilities in B.C., Alberta and the U.S.A. Review your plans with our associates before you discuss with real estate agents.

**(SAVE THOUSANDS OF DOLLARS AND ELIMINATE
COSTLY ERRORS AND UNNECESSARY MISTAKES.)**

**... NO OBLIGATION AND WE GUARANTEE OUR COMMITMENT 100% ...
THANK YOU ... WAYNE H. HARTLEY ... C.E.O. ...**

CONFIDENTIAL CONSULTATION BY APPOINTMENT ONLY.

**5741-A 176th Street
Surrey, B.C. V3S 4C9**

**Office (604) 576-1100
Pager (604) 645-0853**

Positions Available/Sought

YUKON - Whitehorse: Associate required for Klondyke Dental Clinic. If you enjoy modern city amenities and the great outdoors you are welcome to join us as a general dentist associate, or in the capacity of a children's dentist. Contact Dr. Pearson at (403) 668-4618. (02/04)

BRITISH COLUMBIA - Victoria: Associate wanted with view toward a future partnership for a pedodontist. Must be a caring, hard-working individual. Position available after December 1995. Your future has unlimited potential with a great lifestyle and the best climate in all of Canada. Please call (604) 744-1065 after 6 p.m. (02/04)

BRITISH COLUMBIA - Prince George: Associate wanted. Looking for a motivated conscientious associate to work with owner in a large, very modern practice located in a rapidly growing university commu-

nity in north central B.C. Excellent opportunity to increase a new graduate's clinical and practice management skills. For information call (604) 964-6700. (10/13)

BRITISH COLUMBIA - Victoria: ASSOCIATE OPPORTUNITY. Take over existing patient base in a very busy, large, computerized four-dentist practice. Extended hours, family practice. Must be experienced, outgoing and motivated. Position available immediately. Call Dr. Don Bays (604) 381-6433 (O), (604) 595-8050 (H). (01/04)

BRITISH COLUMBIA - Chilliwak: Associate desired to help take care of the patients in a beautiful family practice. Long-term commitment with partnership as a goal. Call Dr. Deborah A. Hallinan, Home: (604) 795-3077, Office: (604) 792-3324, or write: 102-9123 Mary Street, Chilliwak, B.C. V2P 4H7. (03/05)

BRITISH COLUMBIA - Penticton: Associate needed in the Spring of 1995 for a growing dental practice.

Please reply to: Dr. Ronald A. Johnson, #109-1301 Main Street, Penticton, B.C. V2A 5E9. Phone: (604) 493-0020, Fax: (604) 493-1986. (03/05)

BRITISH COLUMBIA - Vancouver: Highly motivated dentist is seeking a full-time position in a quality dental practice located in Vancouver (with associateship or buy-in potential in the future). I am a young dynamic dentist with a pleasant personality and good clinical skills. I have two years experience since my graduation at the University of Montreal. Please call or leave a message (418) 692-1723 or reply to CDA ACCESS Box # 2662. (03/05)

BRITISH COLUMBIA/ALBERTA: Experienced female dentist is looking for a full-time associateship anywhere in B.C. or Alberta, with possible future buy-in. Please call (306) 374-9692 or Fax (306) 244-5166. (04/05)

JUMP-START YOUR CAREER!

Become an associate at our busy dental office in beautiful Red Deer, Alberta. A tremendous learning experience, working with a great staff.

Call today
(403) 346-9122. (03/05)

CENTRAL ALBERTA - RED DEER

Successful and well-managed practice seeks an experienced yet conservative dentist who sincerely cares about patients and is a team player.

Please contact Fran Holler at
(403) 347-8008. (02/04)

ALBERTA - Medicine Hat: Full-time associate required to start May/June 1995. Require above average academic achievement, good character, socially responsible with a deep concern and commitment for the care of others. Modern and spacious family-oriented clinic features 16 operatories and is well located in a busy and growing community. Please call Kevin at (403) 526-0777. (11/04)

ALBERTA - Calgary: Associate wanted to share dental space and expenses. Modern group practice, central location, preventive-oriented emergency service, extended hours. Requires two dentists to purchase part of dental clinic and share expenses. Send C.V. to CDA ACCESS Box # 2663. (03/05)

Dentist

Greater Vancouver area, B.C.

The BC Cancer Agency is dedicated to excellence in patient care, research and cancer prevention. Our Fraser Valley Cancer Centre - a new, full-service cancer treatment facility adjacent to the Surrey Memorial Hospital - is due to open in April 1995 and will serve 2,500 new patients annually at full capacity.

We require the services of a prosthodontist, specialist in oral medicine or general dentist with strong prosthodontic skills, and an interest in oral medicine to provide primary support for the needs of our cancer patients. The successful applicant will possess demonstrable interest in and the ability to be a strong contributor to the multi-disciplinary care team.

The incumbent will report to the Centre Director for day-to-day operational matters and to the Division Head for standards of care and patterns of practice. Following an appropriate period of orientation and experience at the Vancouver Cancer Centre, the appointee will be responsible for the administration of the department and the management of patients referred to the Fraser Valley Cancer Centre. This is a part-time position of 4 half-day sessions per week.

Please submit a résumé and the names of three references to: Human Resources, BC Cancer Agency, 600 West 10th Avenue, Vancouver, B.C. V5Z 4E6; fax (604) 877-6037. We would like to thank all applicants and regret that only those who are interviewed will be acknowledged.



BC Cancer Agency

4391

You can never book a tee time for the weekend so, on Tuesday, Dr. Bob takes off.

At Dentrux we recognize that convenience is something patients demand. This often means being available to them the odd evening and on weekends.

We answer patient demands for convenient dental care by providing appointments that meet the often hectic schedules of today's families. Consequently, we enjoy a steady flow of new patients. And this flexibility allows you to take time off on days when others are working.

That's why most Dentrux dentists get their time on the links — while

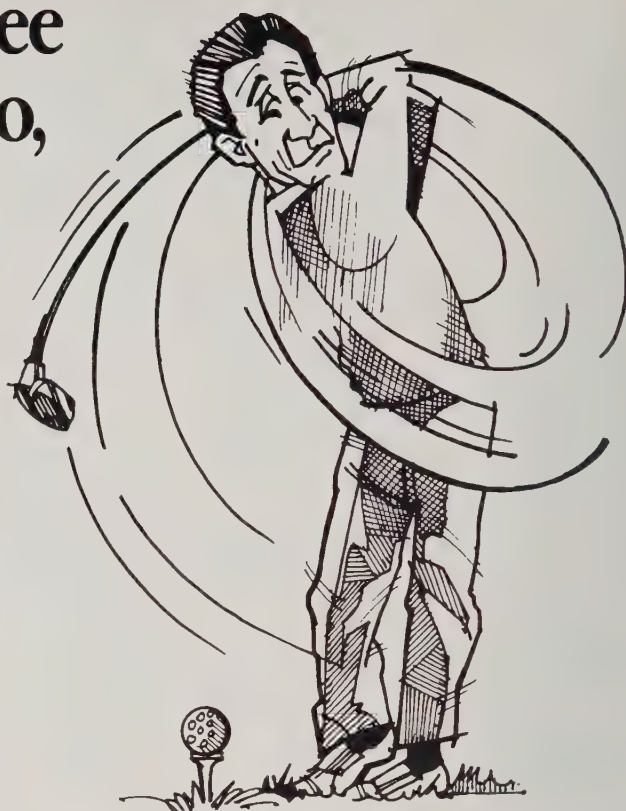
the rest sit in the pro shop on the weekends waiting for a tee-time.

Opportunities in Calgary and Winnipeg.

For more information, contact Dr. Roger Watson.



#300, 222 - 58th Avenue S.W.
Calgary, Alberta T2H 2S2
Phone: (403) 255-6211
Facsimile: (403) 253-5014
Toll Free: 1-800-661-8663



ALBERTA - Calgary: Dentist/specialist to share space part time or full time in modern computerized office. Prime downtown retail location, high pedestrian walk-by traffic. Owner working four days a week. Six operatories, gross 500K a year. Call office (403) 265-2929, home (403) 686-2921. (04/06)

ALBERTA - Calgary: Locum required for a busy oral and maxillofacial surgery office in Calgary, July 17th - August 14th inclusive. Must be a licensed specialist in Alberta. Please reply to CDA ACCESS Box 2667. (04/04)

SASKATCHEWAN - Rosetown: Associate wanted. Excellent opportunity for a full-time associate to work with a well-established practice, part time in Rosetown and part time at a satellite practice in Eston. If you are a highly motivated dentist looking to work in a progressive environment (fully computerized, highly trained team members ...) away from the city (yet easily accessible to Saskatoon), we would like to hear from you. Buy-in potential exists for the right candidate. Please

contact Dr. Glenn Riekman, Box 1690, Rosetown, SK S0L 2V0. Phone: office (306) 882-2123 or home (306) 882-2006. (02/04)

MANITOBA - Winnipeg: Full-time associate desired for a well established dental practice in West Kildonan, Winnipeg. Call (204) 334-1768. (04/06)

ONTARIO - Thunder Bay: Full-time associate wanted to start immediately in a combined general dentistry and anesthesia practice. All new equipment (under five years), with three to four ops, modern office. Skiing, fishing, hunting, camping, hiking etc. all within minutes of town. Please call (807) 683-5222 ask for Doug or Sue. (03/05)

ONTARIO - Southwest Region: Periodontist and endodontist required for a multi-specialty practice. Part time initially with possibility of developing into a full-time partnership. Reply to CDA ACCESS Box # 2641. (10/04)

ONTARIO - Sudbury: Seeking an experienced associate for my busy

family practice. Expanded office hours will include evenings and Saturdays. For more information please contact Russell Knight c/o EXPEDIENT CONSULTANTS (905) 415-9767. (02/13)

ONTARIO - Scarborough
ENDODONTIST REQUIRED
S.E. McCowan Road and Hwy. 401.
One day per week for progressive modern well established general practice with a concentrated focus on perio/prosthodontics.
(416) 296-1080 - Ask for Colette
Fax: (416) 296-1066. (04/06)

ONTARIO - WINDSOR
Wanted motivated conscientious associate to work with owner in a modern general practice.
(New facilities, flexible hours).
Bilingualism, family oriented and experience all beneficial. Progressive philosophy, superior staff, excellent growth potential. **Reply to CDA ACCESS Box # 2668.** (04/13)

UNIVERSITY OF WESTERN ONTARIO

Division of Oral Biology seeks outstanding candidate with interests in molecular biology of mineralized tissues for full-time, tenure-track position, Assistant or Associate Professor level. Ph. D. (or equivalent) and at least two years postdoctoral experience required.

Appointee is expected to develop or have already established a vigorous, externally-funded research program complementing existing strengths in biochemistry and physiology of mineralized tissues. Current areas of interest include signal transduction in bone cells, extracellular matrix biochemistry and mechanisms of biological mineralization. A commitment to teaching and administrative contributions are expected.

Screening will begin April 1995 and continue until position filled. Send curriculum vitae, selected reprints outline of research plans and names of three referees to:

**Dr. Ralph L. Brooke, Dean,
Faculty of Dentistry,
The University of Western Ontario,
London, Ontario N6A 5C1.**

Position is subject to budget approval. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada. The University of Western Ontario is committed to employment equity, welcomes diversity in the workplace, and encourages applications from all qualified individuals including women, members of visible minorities, aboriginal persons, and person with disabilities.

(04/04)

ONTARIO - WINDSOR Oral Surgeon

Established oral and maxillofacial surgery practice seeking board eligible/certified oral surgeon for associateship leading to partnership.

**Reply to Dr. Bernard Lyons
1368 Ouellette Ave.
Windsor, Ontario N8X 1J9.** (04/06)

ONTARIO - Sudbury: Wanted associate/partner to join young solo dentist with two well established (7 and 15 year old) practices. Ideal for a recent grad. Excellent associate earning opportunity. Hospital privileges available. Possible transferal of an existing four-year government incentive grant. Please call (705) 522-4252. (04/05)

ONTARIO - Northwestern Region: Full-time associate needed for extremely busy general dental practice. Dentists and hygienists fully booked eight months in advance. High gross, high net, excellent staff and working conditions. Practice on American border in Northwestern Ontario. Please call (807) 274-5365, (807) 274-5549 evenings and weekends, or write to 1201

Colonization Road West, Fort
Frances, Ontario P9A 2T6. (04/06)

RHODE ISLAND, USA

- Rapidly growing High Tech Endodontic Practice is seeking a partner.
 - Incentive and student loan pay back a possibility in compensation package.
 - Two ocean-front offices will appeal to the water-sport enthusiast.
 - Sponsorship for work Visa available.
- Please fax cover letter and curriculum vitae to **(401) 946-3780**, if you would like to pursue this opportunity. (03/05)

*At last you have
a better way to access
the dental marketplace.
To place your
CDA ACCESS AD
Call
**Neil McGillivray at
(800) 661-5004
in Toronto call
(905) 278-6700***



Lectureship in Conservative Dentistry

Applications are invited for a Lectureship in the Department of Conservative Dentistry (RF-94/95-60), tenable from 1 September 1995. Appointment will be made on a three-year fixed-term basis, with a possibility of renewal.

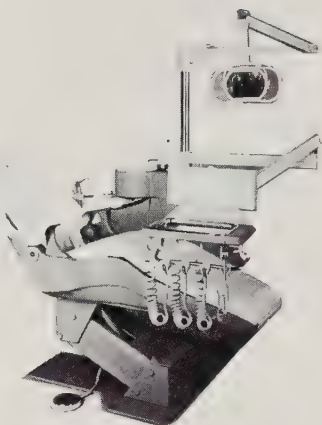
Applicants should possess a dental qualification registrable in Hong Kong, and preferably additional qualifications and special or research interests in endodontics, fixed prosthodontics or occlusion. Previous teaching or hospital experience would be an advantage.

Annual salary [non-superannuable but attracting 15% (taxable) terminal gratuity] is on an 11-point scale: HK\$397,560 - HK\$787,740 (approx. C\$72,284 - C\$143,225; Canadian Dollar equivalents as at 7 February 1995), with starting salary depending on qualifications and experience. At current rates salaries tax will not exceed 15% of gross income. Children's education allowances, leave, and medical benefits are provided; housing or tenancy allowances are also provided in most cases at a charge of a percentage of salary, currently 7½%.

Further particulars and application forms may be obtained from the Appointments Unit, Registry, The University of Hong Kong, Hong Kong (tel. (852) 2549 9147: 24-hour service; fax: (852) 2559 2058; E-mail: APPTUNIT@HKUVM1.HKU.HK). Particulars are also available on the University's listserv accessed by E-mail as "listserv@hkuvml.hku.hk" (specify "get apptment filelist" for list of vacant posts). Enquiries about job responsibilities may be addressed to Professor I.E. Barnes, Head of Department of Conservative Dentistry, Prince Philip Hospital, 34 Hospital Road, Hong Kong (fax (852) 2559 9013). Closes: **15 May 1995.**

DANSEREAU HEALTH PRODUCTS

\$3995.00 (U.S.) COMPLETE OPERATORY



Dansereau Health Products Inc.
559 S. Rose St.
Anaheim, Ca. 92805
Ph# (800) 423-5657 U.S.A. and
Canada
Fax# (714) 776-4652

CALIFORNIA DENTAL CHAIR

With Adjustable Headrest
Automatic Return
5 Year Warranty
30 color choices

CALIFORNIA DELIVERY SYSTEM

3 Handpiece Automatic
Cuspidor with Cup Filler
and Assistants Package
includes an E-Z install Junction Box

CALIFORNIA DENTAL LIGHT

Chair Mounted Light
High and Low Settings

10-14 DAY DELIVERY
ON ALL EQUIPMENT

Proudly Made in the
U.S.A. for 32 Years

COMPLETE NEW DENTAL OFFICES AVAILABLE FOR \$418.86 (U.S.) PER MONTH.

SASKATCHEWAN: Attention oral surgeons and orthodontists. I need your Axial-Tome 60. Call immediately (306) 463-4488 or fax (306) 463-4488. (12/05)

Miscellaneous

BRITISH COLUMBIA: Vacation property for exchange. Incredible rural lakefront property on pristine Kootney Lake with a two bedroom, simple, clean home, wood stove and outstanding view from hot tub! Endless recreational opportunities depending on season: downhill skiing (Whitewater), cross country skiing and backcountry skiing, skating, fishing, boating, windsurfing, swimming, horseback riding, biking, running, and much much more! Please reply to CDA ACCESS Box # 2669. Fax inquiries to (604) 352-5526, or phone (604) 229-4557 (home). (04/04)

ONTARIO - Lake Temagami

For sale, the ultimate in year-round comfort. Modern totally winterized retreat, three bedrooms, two bathrooms, Jacuzzi, 40 ft. living, dining room, pine cathedral ceiling, fully equipped kitchen, laundry room. Screened 40 x 10 ft. porch, fully furnished, two sleeping cabins, electric sauna at dock, three acres southwest exposure, two practice golf greens, 10 minutes from marina, \$450,000.

Serious inquiries to

**P. Baines, Haldenstrasse 20,
CH 6006, Luzern, Switzerland.**
Call (+ 41 41) 32-9119,
Fax: (+ 41 41) 32-9123. (04/05)

CONDOS FOR SALE

Costa Rica, Central America

Canadian physician is building 16 condo apartments at **Jaco Beach, Costa Rica,** 100 feet from the Pacific Ocean.

One bedroom units \$69,900 to \$74,900 U.S. funds. Limited mortgage available.

Ecotourism, contact R. Aubin, MD for a complimentary brochure. **Phone**

(613) 526-1952, Fax (613) 526-0990. (01/04)

ADVERTISERS' INDEX

Ash Temple. IFC

Bank of Nova Scotia: 295

Bisco Dental IBC

Block Drugs 321

CDA Gentle Office
Reminders..... 286, 287

CDA Leasing 345

CDA Library 277

CDAnet Plus. 343

CDA RSP 285

CDA Surviving
and Thriving 333, 334

CDA Taking Care
of Business 351, 352

CDSPI 322

Dentsply 327

Hoechst-Roussel 278

Hoffman
La Roche 328, 338, 339

Ivoclar Vivadent 280

Ivoclar Williams 296

Journées Dentaires 346

Kerr Canada 301

Maximum Computers 288

Metasy's Dental. 309

Organ Donor Awareness... 349

Premier Dental 272

Quintessence 336

Warner Lambert OBC, 291

A New Era in Posterior Composite Restorations



"A HIGHLY RECOMMENDED CLASS II TECHNIQUE"

— JOHN KANCA, III, DMD

Dr. Kanca is a graduate of the University of Connecticut and has a private prac-

tice in Middlebury, CT. with an emphasis on Cosmetic Dentistry. He is a founding member and past president of the American Academy of Cosmetic Dentistry. Dr. Kanca is recognized worldwide as one of the leading authorities on adhesive dentistry. Dr. Kanca is attributed with discovering the ability to bond to wet tooth structure as well as being the first to generate a gap-free restoration in-vivo. He is the recipient of the prestigious Hinman Medallion and more recently the Gordon Christensen Award, presented at the 1995 Chicago Mid-Winter Meeting.

Two of the most common complaints as far as posterior composites are concerned are post-operative sensitivity and the failure to obtain good contacts. Post-operative sensitivity is due to gap formation, a frequent consequence of composite polymerization shrinkage exceeding the bond strength of the dental adhesive. If polymerization shrinkage force could be minimized, the chances for post-op comfort increases. One of the ways this can be done is with the utilization of a self-cure composite. The use of self-curing materials has long been the recommendation of Takao Fusayama of Japan, and has been continued by Ray Bertolotti. The following technique is an evolution of the prior techniques and offers advantages previously unavailable.

The tooth to be restored is properly isolated. (Fig 1) It is recommended that the tooth be pumiced while waiting for the anaesthesia. The preparation consists simply of removing the undesired material in the tooth. That is, only the old restoration

is removed and any unsupported enamel is allowed to remain. (Fig 2) The second and third significant items of need are the proper matrix and wedge. The recommended matrix is the Sectional Matrix Band and an Anatomic Wooden Wedge. The Anatomic Wedges are contoured concave in both a gingivo-incisal and bucco-lingual dimension. The Sectional Matrix is placed on either interproximal as indicated. (Fig 3) A wedge of proper size is selected and is inserted into the interproximal(s). With this technique severe wedging is not required - the wedges need only be tight. A high-bond strength dental adhesive, such as All Bond 2 from Bisco, is applied to the enamel and dentin. It is light-polymerized for 20 seconds. (Fig 4) Equal amounts of Base and Catalyst of Bis-Fil II are placed on a mixing pad. Bis-Fil II is a dense, viscous autocuring posterior composite. (Fig 5) The material is thoroughly mixed and then is delivered into the cavity preparation via a Centrix Syringe and High Viscosity Tip. Bis-Fil II has an

extremely interesting characteristic, it undergoes three distinct phases during polymerization. At first it is easily plastic in handling, but then it transforms into a rubbery type consistency. During this second phase the Bis-Fil II is condensable. (Fig 6) The material is condensed into the contact areas and the pulpal floor. A Clinician's Choice #1 is the recommended condensing instrument. This phase lasts 15-20 seconds. At the end of the second phase the material will become noticeably harder. At this point the condensing must stop, lest the composite break. The self-cure material is filled into the cavity such that it fills about 2/3 of the cavity preparation. (Fig 7)

A thin layer of unfilled bonding resin is applied to the hardened composite and a wear resistant light-cure composite (such as AeliteFil) is incrementally placed into the cavity prep until slightly overfilled. (Fig 8) Each increment should individually be light-polymerized. The matrix and wedges are then removed and the restoration is finished. It is recommended that a flexible disc be used to finish the excess that will be present in all four line angles. After the occlusion is properly adjusted (Fig 9), the restoration is etched briefly (3 sec), rinsed and dried. The composite surface sealant Fortify is then applied to the restoration. The Fortify is air-thinned, the embrasures are cleared with floss and then the restoration is light-polymerized for 30 seconds each from the facial, lingual and occlusal surfaces. The completed case is shown. (Fig 10) This technique could possibly make post-operative sensitivity a thing of the past. (Fig 11) shows the restoration at 1 year recall.



Bis-Fil II is manufactured by Bisco Dental Products, Itasca, IL. IN CANADA, ... for more information regarding this technique and associated products please contact BISCO DENTAL PRODUCTS CANADA (Western & Quebec Dentists) at 1-800-667-8811 or CLINICAL RESEARCH DENTAL (Ontario & Maritime Dentists) at 1-800-265-3444.

LISTERINE*

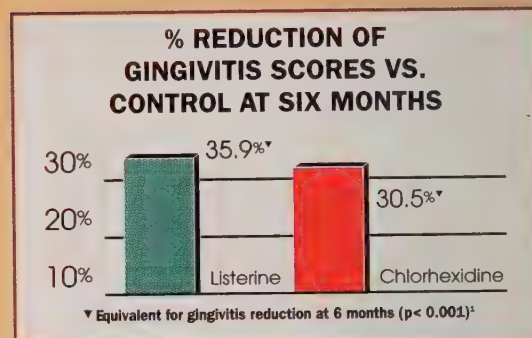
FIGHTS GINGIVITIS

AS EFFECTIVELY

AS CHLORHEXIDINE.



A recent clinical study¹ concluded that Listerine inhibited the development of gingivitis[†] as effectively as 0.12% chlorhexidine. In fact, Listerine reduced the development of gingivitis by almost 36% over brushing and flossing alone¹.



Unlike chlorhexidine, Listerine works without causing side effects like extrinsic tooth stain¹. Listerine is the only oral rinse, prescription or nonprescription, to receive the Canadian Dental Association's seal of recognition for efficacy in the reduction of plaque and gingivitis².



Twice daily rinsing with Listerine works synergistically with brushing, flossing and your professional care¹. If you'd like to find out more about Listerine call 1-800-683-1650. We'll give you all the facts.



**LISTERINE FIGHTS GINGIVITIS
WITHOUT STAINING**

[†] "Listerine helps reduce gingivitis (minor inflammation of the gums caused by plaque above the gumline) when used in a conscientiously applied program of oral hygiene and dental care." CANADIAN DENTAL ASSOCIATION [†] Gingivitis was evaluated using the Modified Gingival Index. Listerine: Do not swallow. Not to be used by children under 12 years of age. Keep out of reach of children

*TM Warner-Lambert Company Warner Wellcome Inc. use Scarborough, Ontario M1L 2N3

1. Overholser CD et al. Comparative effects of two chemotherapeutic mouthrinses on the development of supragingival dental plaque and gingivitis. *J Clin Periodontol* 1990;17:575-579
2. Data on file, 1995

A

JOURNAL

of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

Vol. 61 No. 5

MAY
MAI

1995

If undeliverable
to Addressee
RETURN TO SENDER
Return Postage
Guaranteed

Si non livrable
au destinataire
RETOURNER A
L'EXPÉDITEUR
Port Payé



DENTAL LIBRARY
JOURNAL OF ORAL
MAXILLOFACIAL SURGERY
VOLUME 53
NUMBER 5
MAY 1995

Oral and Maxillofacial Surgery
Chirurgie buccale et maxillofaciale

Turn a GANG of *KILLERS* loose in YOUR OFFICE!

Microbex has a whole range of microbial control products and services to cover your every need.

Our full-spectrum Ethanol solution disinfects instruments or surfaces in one minute – our tests prove it! This increases productivity while accelerating patient turn-around.

Our innovations in product and technique include unique dispensing systems and sterility assurance programs.

A new fully equipped Research, Quality Control and Microbiological Laboratory offers a full range of services including

MICROBEX
MICROBIAL CONTROL
CONTRÔLE MICROBIOLOGIQUE

Leaders in Microbial Control
67 Lesmill Road
Don Mills, Ontario M3B 2T8

An Ash Temple Company-
Ash Temple Limited, Servident,
A-Tech, Microbex Aseptics,
Acrylium

computerized spore testing for autoclaves, chemiclaves and dry heat sterilizers.

These and many other reasons make Microbex the Canadian leader in asepsis products today.

For more information on the complete line of Microbex products, call 416-477-5442 or your Ash Temple branch.



Microzyme

Dual Purpose Enzymatic Instrument Pre-Soak and Ultrasonic Cleaner
Solution enzymatique de pré-trempeage d'instruments et nettoyeur ultrasonique

The package contains a 2 L of solution.
Dilution: 1:10
Rinse: 10 min
If applied to 1000 ml water
Contains: Enzyme 4%,
Surfactant 20%.

MICROBEX

2 L

Sonibex

Ultrasonic Disinfecting Detergent Concentrate
Détergent ultrasonique désinfectant concentré

This package contains a sufficient concentrate to prepare 40 L of solution.
Dilution: 1:10
Rinse: 30 min (2 pumps) to 100 ml water
Contains: Surfactant 5%,
2-Pyridyl-phenol 2.14%,
Chlorine 2.14%.

Manufactured in Ontario

2.14% 2-Pyridyl-phenol à 0.1%

Surfex-E

Ethanol Disinfectant for Hard Surfaces
Désinfectant à l'éthanol pour surfaces rigides

Ready to use. Do not dilute.

Active ingredients: 70% Ethyl Alcohol, 0.14% Chlorhexidine, 0.14% o-phenyl-phenol à 0.1%.

Lab-X

All Purpose Surface Laboratory Disinfectant
Désinfectant de laboratoire polyvalent à usage

Ready to use. Do not dilute.

Active ingredients: 70% Ethyl Alcohol, 0.14% Chlorhexidine, 0.14% o-phenyl-phenol à 0.1%.

Virobex-P

Antimicrobial Liquid Handwash
Solution antimicrobienne pour les mains

Ready to use. Do not dilute. Lathers hands smooth and soft even after repeated use.
Directions to use: Scrub well for 15 seconds. Rinse thoroughly and dry.
Active ingredients: 0.5% Parachloro-metachlorophenol.

Prêt à utiliser. Ne diluez pas. La mousse est douce et soyeuse même après utilisation répétée.
Mode d'emploi: Frottez pendant 15 secondes. Rincez à l'eau et séchez.
Ingrédients actifs: 0.5% Parachloro-metachlorophenol.

Virobex-P

Antimicrobial Liquid Handwash
Solution antimicrobienne pour les mains

Surfex-E

Ethanol Disinfectant for Hard Surfaces
Désinfectant à l'éthanol pour surfaces rigides

Ready to use. Do not dilute.
Active ingredients: 70% Ethyl Alcohol, 0.14% Chlorhexidine, 0.14% o-phenyl-phenol.



Prêt à utiliser. Ne pas diluer.
Ingrédients actifs: 70% Ethyl Alcohol, 0.14% Chlorhexidine, 0.14% o-phenyl-phenol à 0.1%.

Instrubex-E

Ethanol Disinfectant for Instruments
Désinfectant à l'éthanol pour instruments

Notes: 1.3 strength 1:10
Active ingredients: 70% Ethyl Alcohol, 0.14% Chlorhexidine, 0.14% o-phenyl-phenol à 0.1%.

Notes: 1.3 strength 1:10
Active ingredients: 70% Ethyl Alcohol, 0.14% Chlorhexidine, 0.14% o-phenyl-phenol à 0.1%.

Instrubex-G

Activator Concentrate
Concentré d'activateur

CDA MISSION STATEMENT



“The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.”

SPECIALTY EDITORS

Endodontics

Dr. W. H. (Bill) Christie

Oral and Maxillofacial Surgery

Dr. David S. Precious

Oral Pathology

Dr. James H. P. Main

Orthodontics

Dr. Kenneth E. Glover

Pediatric Dentistry

Dr. Victor Legault

Periodontics

Dr. James E. (Jim) Stakiw

Prosthodontics

Dr. Michael MacEntee

Public Health

Dr. Donald Lewis

Radiology

Dr. Robert E. Wood

CONSULTING EDITORS

Anesthesiology

Dr. Earle Young

Dental Materials

Dr. Peter T. Williams

Medicine

Dr. George K.B. Sandor

Pharmacology

Ms. Helen Grad

Forensic Dentistry

Dr. Robert Dorion

Infection Control

Dr. Joel Epstein

Practice Management

Dr. Bob Brandon

Cosmetic Dentistry

Dr. Ken Neuman

Nutrition

Mrs. Nina Burgess

Canadian Dental Hygienists Association

Ms. Carol Matheson Worobey

Canadian Dental Assistants Association

Ms. Charlotte Peer-Miller

CDA EXECUTIVE COUNCIL

President

Dr. Bryn Sigstead
Edmonton, Alberta

President-Elect

Dr. James Brookfield
Kirkland Lake, Ontario

Vice-President

Dr. Barry Dolman
Montreal, Quebec

Dr. John Diggins
Vancouver, B.C.

Dr. Toby Gushue

St. John's, Nfld.

Dr. Richard D. Sandilands
Edmonton, Alberta

Dr. David Somer
Hamilton, Ontario

Dr. Tom Breneman
Brandon, Manitoba

Dr. Louis Dubé
Sherbrooke, Quebec

CDA STAFF

EXECUTIVE

DIRECTOR'S OFFICE

Executive Director

A. Jardine Neilson

CORPORATE AFFAIRS

Manager, Corporate Affairs

Sandra Davis

Coordinator,
Board and Executive
Suzanne Burton

PROFESSIONAL SERVICES

Director, Education and
Accreditation/Professional
Services

Brian Henderson

Associate Director,
Education and Accreditation
Susan Matheson

Coordinator, Education and
Accreditation

Gay MacQuarrie

Coordinator, DAT

Danuta Askew

Coordinator, Purchaser Information Program, CDAnet
Patricia Drake

COMMUNICATIONS

Director of Communications

Linda Teteruck

Librarian

Martha Vaughan

Manager, Membership
Services

Carol Anne Deneka

Manager, Information Services
Lisa Burke

ADMINISTRATION

Director of Administration

Joel R. Neal

Manager, Human Resources

Tefiro Kyeyune

Secretary, Membership
Lydia Allison



Published monthly by the Canadian Dental Association at 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6. Copyright 1982 by the Canadian Dental Association. Authorized as Second Class Mail, Registration Number 5384. Postage paid at Ottawa, Ont.

Subscriptions: All subscriptions payable in advance in Canadian funds. In Canada — \$48 (+ GST); United States — \$53; all other — \$58.

Subscriptions are for 12 issues, not necessarily conforming with the calendar year.

Notice of change of address should be received before the 10th of the month, to become effective the following month.

Member:

American Dental Editors' Association
Canadian Circulations Audit Board

Call CDA for information and assistance toll-free at:

1-800-267-6354

CDA Fax No.: 1-613-523-7736

All matters pertaining to advertising should be directed to:

Keith Health Care Communications
1382 Hurontario Street
Mississauga, Ont.
L5G 3H4

Attn : Ms. Janet Duffield,
Sales Representative, or,
Mr. Neil McGillivray, CDA Access Representative

Tel. : (905) 278-6700
Fax : (905) 278-4850



May/
Mai
1995
Vol. 61
No. 5

THE MOST ACCURATE IMPRESSIONS... With Just A Touch!

ESPE PENTAMIX® will revolutionize your impression mixing.

- ◆ Saves time, providing you with a void-free mix every time.
- ◆ Easy to use. You even have extended working time.
- ◆ Ideal for the asepsis oriented practice, eliminates potential cross contamination.



*The tray and syringe are loaded in seconds.
There is virtually no waste and no clean up.*

New!

ESPE PENTAMIX®

AUTOMATIC MIXER FOR IMPREGUM®

Send for a free video.

® Pentamix is a registered trademark of ESPE Dental-Medizin GmbH & Co. KG, Germany
® Impregum is a registered trademark of Premier Dental Products Co.

ESPE Canada • 480 Hood Road, Unit 3 • Markham, Ontario L3R 9Z3 • 800-465-8455



JOURNAL

CANADIAN DENTAL ASSOCIATION/
L'ASSOCIATION DENTAIRE CANADIENNE

MAY/MAI 1995
VOL. 61, NO. 5

Executive Director
A. Jardine Neilson

Editor
Dr. P. Ralph Crawford

Managing Editor
Terence Davis

Assistant Editor, Writer
Antonia Papadakou

*Coordinator, production
& desktop services*
Michelle Walters

Circulation Secretary
Rachel Galipeau

Scientific Editor (English)
Dr. Robert S. Turnbull

Scientific Editor (French)
Dr. Pierre C. Desautels

All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association. The editor reserves the right to edit all copy submitted to the *Journal*. Publication of an advertisement does not necessarily imply that the Canadian Dental Association agrees with or supports the claims therein.

The *Journal of the Canadian Dental Association* is published in both official languages, except scientific articles, which are published in the language in which they are received. Readers may request the *Journal* in the language of their choice.

ISSN 0709 8936
PRINTED IN CANADA

FEATURE 389



WORLD NO-TOBACCO DAY, MAY 31, 1995

"Tobacco costs more than you think"
A Message from the World Health Organization

390

War is an Atrocious Thing

P. Ralph Crawford, BA, DMD

392

Ash Temple Limited — A Century of Service

P. Ralph Crawford, BA, DMD

ORAL AND MAXILLOFACIAL SURGERY



395

Orthognathic Surgery and the Family Dentist

D.S. Precious, DDS, M.Sc., FRCD(C)
R.H. Goodday, DDS, M.Sc., FRCD(C)

403

Uncommon Postoperative Temporomandibular Joint Complications

Simon Weinberg, DDS, FRCD(C)
Bohdan Kryshalskyj, B.Sc., DDS, MRCD(C)
Claudio Tocchio, DDS, MRCD(C)
Kevin McCann, B.Sc., DDS, FRCD(C)

CLINICAL



412

Effects Of Home Bleaching On the Tissues Of the Oral Cavity

John Sterrett, DDS, Cert. Perio.
Richard B. Price, BDS, MS, DDS, MRCD(C)
Theresa Bankey, B.Sc., DDS, Cert. Perio.

429

Dental Amalgam: Scientific Consensus and CDA Policy

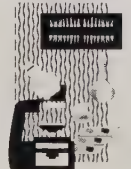
Brian Henderson, BA, M.Ed.

432

Papillon-Lefèvre Syndrome Associated Early Onset Periodontitis: A Review and Case Study

David French, B.Sc., DDS
Helen Scott, B.Sc., DDS, M.Sc., MRCD(C)
Christopher M. Overall, BDS, B.Sc., MDS, PhD

RESEARCH



441

Osteomyelitis Of The Jaws

Steve Bernier, DMD
Sylvie Clermont, DMD
Guy Maranda, DDS, FRCD(C)
Jean-Yves Turcotte, DDS, CD,
MRCD(C)

DEPARTMENTS



366

Meetings and Courses

371

Editorial

373

President's Column

375

Letters To the Editor

378

News Update

382

CDSPI Reports

385

Practice Management and Success

420

Advertisers' Index

421

CDA Convention

452

CDA Access Ads

JOURNAL

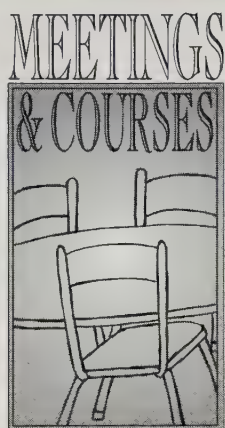


Cover: Oral and maxillofacial
surgery (Photograph Courtesy of
Dr. Walter Pelech, Design by
Mike Lord).

JOURNAL

May/
Mai
1995
Vol. 61
No. 5

365



INTERNATIONAL



June 1-3

BDA Annual Conference "Success in Practice" to be held in Birmingham, England. For more information contact: Linda Wallace, British Dental Association, 64 Wimpole St., London W1M 8AL, England. Tel: (171) 935 0875 or Fax: (171) 487 5232.

June 12-15

1995 Roentgen Centenary Congress and Historical Exhibition to be held in Birmingham, U.K. For more information contact: Miss V. Whitehead, Conference Office, British Institute of Radiology, 36 Portland Place, London W1N 4AT, U.K.

June 12-23

An intensive course in Oral Pathology (including most aspects of Oral Medicine) will be given in Copenhagen on the premises of the Danish Dental Association. The course consists of 40 lectures and 30 hours at the microscope and will be conducted in English. Registration before April 1, 1995. For further information: Secretary Anne Grethe Ingversen, Department of Oral Pathology, School of Dentistry, University of Copenhagen, 20 Nørre Allé, KD-2200 Copenhagen N, Denmark. Tel.: +45 35326721.

June 28 - July 1

Third Endodontic World Congress sponsored by the International Federation of Endodontic Associations and organized by the Società Italiana di Endodonzia will be held in Rome, Italy. For more information contact IFAE - SIE Viale Ippocrate, 97 - 00161, Roma, Italia. Tel.: 39 6 4469955 or Fax: 39 6 4457464.

June 28 - July 1

International Association for Dental Research — 73rd General Session and Exhibition to be held in Singapore. For more information contact: E. Gwynn Breckenridge, Director of Scientific Meetings, 1111 Fourteenth Street N.W., Suite 1000, Washington, D.C. 20005, U.S.A. Tel: (202) 898-1050 or Fax: (202) 789-1033.

June 29 - July 3

XII International Congress on Oral & Maxillofacial Surgery to be held in Budapest, Hungary. For more information contact: Prof. G. Szabo, Dept. of Oral & Maxillofacial Surgery, Semmelweis University of Medicine, H-Budapest VII, Maria U. 52, Hungary.

August 23-26

XV World Congress — International Congress of Oral Implantologists to be held in San Francisco, Calif. For more information contact: R. Craig Johnson, 248 Lorraine Ave., Upper Montclair, N.J. 07043, U.S.A. Tel.: (201) 783-6300 or Fax: (201) 783-1175.

October 23-27

83rd FDI Annual World Dental Congress to be held in Hong Kong. For information contact: Laura Stephenson (613) 523-1770 ext. 246.

October 31 - November 4

Centenary Congress — 28th International Dental Meeting to be held in Buenos Aires, Argentina and sponsored by the Asociación Odontológica Argentina. For more information contact: Dr.

Guillermo Pisarenko, president, Junin 959, (1113) Buenos Aires, Argentina. Tel: (1) 961-6141 or Fax: (1) 961-1110.

November 15-17

Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00 or Fax: (8) 662 58 42.

CANADA



June 3

A Symposium on Implant Supported Overdentures — This symposium will be directed by Dr. George Zarb and the Implant Prosthetic Unit staff of the University of Toronto and feature experts in the field from other teaching institutions. For information contact: Continuing Dental Education, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ont. M5G 1G6. Tel: (416) 979-4902 ext. 4503 or 4590, or Fax: (416) 979-4941.

June 5-9

A Refresher Program in Dental Hygiene — This five-day program will provide a review and update on aspects of dental hygiene care. To be held at the School of Dental Hygiene, University of Manitoba, Winnipeg, Man. For further information contact Continuing Dental Education at (204) 789-3331.

June 8

Dental Nutrition Course to be held in Burnaby, B.C. This six-hour continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ont.) 1-800-937-6878.

June 9

Participation Course — Advanced Endodontic Technique.

This hands-on course is presented by Dr. Shimon Friedman and Dr. Wayne Pulver, with the participation of endodontic department staff, postgraduate residents and invited guests. For more information contact: Continuing Dental Education Office, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ont. M5G 1G6 Tel: (416) 979-4902, ext. 4503 or 4590, or Fax: (416) 979-4941.

June 15

Emergency Procedures in the Dental Practice —

This course will be presented by the department of anesthesia, faculty of dentistry, under the direction of Dr. E. Young. For information contact: Continuing Dental Education, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ont. M5G 1G6. Tel: (416) 979-4902, ext. 4503 or 4590, or Fax: (416) 979-4941.

June 17

What's New for Today's Practice

— Periodontics to be held in Minaki, Ontario and presented by Dr. Eric Freeman. For information contact: Continuing Dental Education, Faculty of Dentistry, University of Manitoba, 780 Bannatyne Ave. Winnipeg, Man. R3E 0W2. Tel.: (204) 789-3331 or Fax: (204) 888-4113.

August 26-29

Canadian Dental Association 1995 Convention to be held at the Ottawa Congress Centre in Ottawa, Ont. Scientific sessions, exhibit hall, social events, special activities, spouse's program and children's program. For more information contact Laura Stephenson, CDA Conventions at 1-800-267-6354.

September 13-17

31st Annual Meeting of the Canadian Academy of Endodontics to be held at the Westin Hotel, Ottawa, Ont. For information contact: Dr. William J. Kost (519) 672-4611 or Dr. George Citrone (613) 238-2463.

September 14-16

Canadian Association of Orthodontists — Annual Scientific Session to be held at the Château Laurier Hotel in Ottawa, Ont. For more information contact the Canadian Association of Orthodontists at (416) 491-3186 or fax (416) 491-1670.

September 14-16

Canadian Academy of Restorative Dentistry and Prosthodontics is holding its scientific session in Toronto, Ont. at the Four Seasons Hotel. For more information contact Dr. Jeff Martin, '95 Convention Registrar, at 90 Eglinton Ave. West, Suite 111, Toronto, Ont. M4R 2E4, or call (416) 488-7914.

September 15-17

Canadian Academy of Pediatric Dentistry/Académie canadienne de dentisterie pédiatrique, Annual meeting/Congrès Annuel to be held at the Sheraton Centre, Montreal, Qué. For more information please contact: Dr. L.-R. Charette, 3550 Côte-des-Neiges, Suite G-80 Montreal, Qué. H3H 1V4. Tel.: (514) 931-1155.

October 11-14

6th Annual Conference of the Canadian Association for Suicide Prevention (CASP)/6^e Congrès annuel de l'Association canadienne pour la prévention du suicide (ACPS) to be held in Banff, Alberta. The theme of this conference is *Building Connections for Suicide Prevention*. For more information contact the Canadian Association of Suicide Prevention, c/o Suicide Information & Education Centre, #201-1615 10 Ave. SW, Calgary, Alta T3C 0J7. Tel.: (403) 245-3900, or Fax: (403) 245-0299.

October 20-21

Southern Ontario Surgical Orthodontic Study Group Meeting to be held in Windsor, Ont. For details contact Dr. Jeff Berger at (519) 258-2632 or Fax: (519) 258-2637.

October 20-22

21st Century Ceramics Symposium to be held in Vancouver, B.C. For more information contact

Ms. Mary Thomas, Vancouver Seminar for Dentistry, #280-7580 River Road, Richmond, B.C. V6X 1X6. Tel.: (604) 278-5426, or Fax: (604) 278-6864.

October 27-29

Workshop Meeting of the Canadian Association of Dental Consultants to be held in Toronto, Ont. For information contact: Dr. W. Norgate, 901 St. Mary's Rd., Winnipeg, Man. R2M 3R4.

U.S.A.



June 8-11

5th International Symposium on Periodontics and Restorative Dentistry to be held in Boston, Mass. For more information contact: Quintessence Publishing Co. Inc., 551 North Kimberly Dr., Carol Stream, Ill. 60188. Fax: (708) 682-3288.

June 23-25

The Office Sterilization and Asepsis Procedures (OSAP) Research Foundation Symposium to be held in Pittsburgh, Pa. — **Infection Control — And Beyond, Preparing for the Next Millennium** as its theme, the fast paced symposium will present state-of-the-art knowledge and will encourage high level discussion among participants. For more information contact the OSAP Central Office at (800) 298-OSAP (6727 or write P.O. Box 6297, Annapolis, Md. 21401, U.S.A.

September 15-16

The American Dental Association, Michigan Dental Association and West Michigan Dental Society are proud to celebrate during 1995 the **50th Anniversary of Community Water Fluoridation in the United States**. An international symposium on community water fluoridation will be held at the Van Audel Center in Grand Rapids, Michigan. For more information contact: Dr. Arnold Morawa or Ms. Debbie Montague, University of Michigan



School of Dentistry, 1011 N. University Ave., Ann Arbor, Mich. 48109-1078. Tel: (313) 764-6856, or fax: (313) 936-3065.

October 4-6

58th Annual Meeting of The American Association of Public Health Dentistry — Call for Abstracts. The AAPHD is inviting papers on a broad range of dental public health topics for presentation at its annual meeting. The theme of this year's meeting is "Oral Health: The Primary Care and Prevention Model." Deadline for submission is May 1, 1995. For further information contact AAPHD National office, 10619 Jousting Lane, Richmond, Va. 23235-2828. Tel: (804) 272-8344 or Fax: (804) 272-0802.

October 7-11

136th Annual Session of the American Dental Association to be held in Las Vegas, Nev. For more information contact: American Dental Association, 211 E. Chicago Ave., Chicago, Ill., 60611, U.S.A. Tel.: (312) 440-2658 or Fax: (312) 440-2707.

November 27-28

American Board of Oral and Maxillofacial Radiology 1995 — Certifying Examination. Applications must be submitted by May 15, 1995. For further information please contact Dr. Curtis Lundeen, School of Dentistry — Oral Radiology, Oregon Health Sciences University, 611 S.W. Campus Dr., Portland, Ore. 97201-3097. Tel: (503) 494-8930.

DENTAL MEETINGS



June 1-3

Dental Association of P.E.I. Annual Meeting to be held at the Mill River Resort in P.E.I. Contact: Dr. G. Hood, (902) 894-9232.

June 9-10

Nova Scotia Dental Association Annual Meeting to be held in Digby, N.S. Contact: Mr. Steve Jennex (902) 420-0088.

August 25-26

Annual Meeting of the CDA Board of Governors to be held in Ottawa, Ont. Contact: Suzanne Burton (613) 523-1770, ext. 201, or 1-800-267-6354.

August 26-29

CDA 1995 Convention to be held in Ottawa, Ont. at the Ottawa Congress Centre. Contact: Laura Stephenson (613) 523-1770, ext. 246, or 1-800-267-6354.

Notices of meetings and continuing education courses are published without charge for appropriate **not-for-profit** dental organizations, teaching facilities or recognized study clubs. Information must be received two months prior to expected publication date, and will be published at the discretion of the editor. Send all requests C/O Ms. Rachel Galipeau, *Journal* circulation secretary, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6.

GREAT Two Striper® REBATES

- ☐ \$3 for purchasing 15
- ☐ \$7 for purchasing 25
- ☐ \$14 for purchasing 40
- ☐ \$28 for purchasing 75
- ☐ \$70 for purchasing 100

To Receive Your Rebates... Forward this coupon and a copy of an authorized dealer invoice indicating appropriate purchase(s) between 5/1/95 and 8/31/95.



Dr. _____

Address _____

City _____ Prov. _____ Postal Code _____

MAIL TO: Premier Canada • 480 Hood Road, Unit #3 • Markham, Ontario L3R 9Z3

Rebates in local currency. Must be claimed by 11/30/95. Allow 4-6 weeks for processing. Maximum total rebate per dentist is \$200.00. Limited offer. Offer may be withdrawn without prior notice. ® Two Striper is a registered trademark of Abrasive Technology, Inc.

north america's #1 diamond for over a decade



CASCADE. UNCOMPROMISED SOLUTIONS FOR DENTISTRY.



INNOVATIVE

The smooth, rounded shapes of Cascade® dental equipment only touch the surface of meeting our cleanability standards. Automatically recessed chair armrests reduce touch surfaces and potential for cross contamination. A-dec's built-in self-contained water system option lets you control water to your patient's oral cavity. Our every effort is to lead the way.

SIMPLE

People here at A-dec love making your job simpler. With the Cascade Master™ Touch Pad, for instance, you can operate up to ten functions in one, cleanable touch surface. You can also centralize your range of motion. Work more efficiently. And focus more completely on your patient's care.



RELIABLE

You who have owned and used A-dec equipment over the years tell us that reliability is one of the reasons you continue to buy A-dec. Yet, even the best products occasionally require service. With intensive factory and field training, service documents and telephone support, your A-dec dealer service technicians are prepared for everything from installing the newest Cascade equipment to servicing the 1960's Micro Cart. You can count on lasting solutions from A-dec.

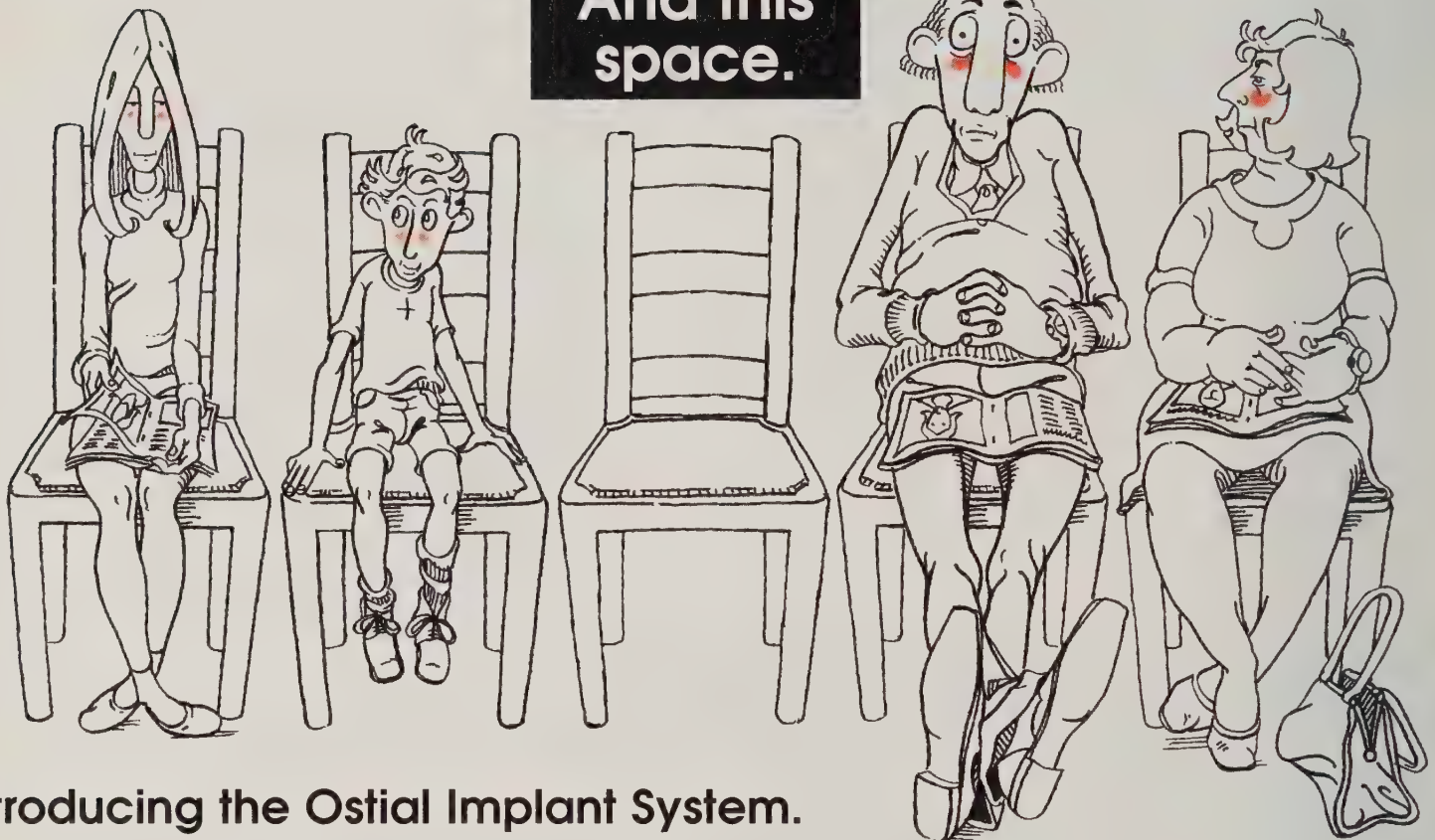


A-dec, Inc., P.O. Box 111, 2601 Crestview Dr., Newberg, OR 97132 USA
800-547-1883, Fax: (503) 538-0276. ©A-dec, Inc., 1995. All rights reserved.

At last, an affordable, uncomplicated implant system to help you fill this space.



And this
space.



Introducing the Ostial Implant System.

Hoechst-Roussel Canada is pleased to introduce Ostial, an affordable, innovative new implant system.

The Ostial Implant has a conical shape for optimum load distribution and a coarse thread design for ease of placement.

Ostial was developed here in Canada and its design is patented.* Training courses will be offered in selected centres and will qualify for Continuing Education credit points.**

For more information, call Michiel Verburg, Product Manager, at 1-800-363-1871 ext.3712 or contact your Hoechst-Roussel representative.

Ostial *Simple.
Affordable.
Innovative.*

Hoechst-Roussel Canada Inc.

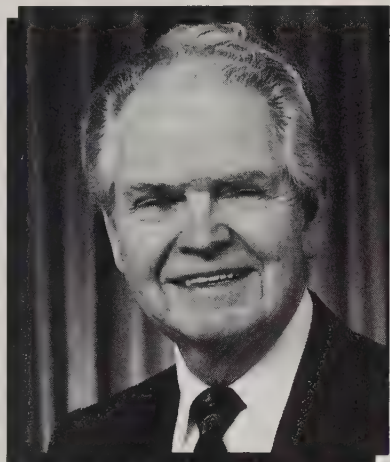
*Canadian patent #1248371 issued.

**For an up-to-date listing, contact HRCI.

The successful outcome of any implant procedure is directly related to proper surgical and prosthetic technique.

EDITORIAL

LETTERS COUNT



Dr. P. Ralph Crawford,
Editor

A recent newspaper headline, "Taxpayers Foot Bill for Flood of Protest Mail," may have been brought about, at least in part, by the success of CDA's recent "Enough is Enough, Say no to a tax on dental benefits" campaign.

The headline referred to a concern expressed by government whip Don Boudria. According to the Liberal member of Parliament for Glengarry-Prescott-Russell, the provision that allows Canadians to send postage-free mail to their MPs is being abused by the special interest groups that are flooding Parliament Hill with protest letters, and it's costing Canadian taxpayers as much as \$5 million a year.

A case in point is the 350,000 cards and letters that Finance Minister Paul Martin received prior to delivering his February 27 budget speech. Or the more than 91,000 "Enough is Enough" letters that found their way into Health Minister Diane Marleau's office — all postage free. That's a lot, when you consider that Ms. Marleau normally receives around 31,000 letters in an entire year.

The situation on Parliament Hill, says Mr. Boudria, is "getting totally out of control." And "something's got to be done."

Well, we have news for Mr. Boudria. What we're seeing is democracy in action. If you don't like the way your leaders are running the country, in a free society such as Canada you have the right to protest. The very fact that the "Enough is Enough" campaign stopped the taxation of dental benefits — at least for now — is stark evidence that 300,000 letter-writers can't be wrong.

The best response to Mr. Boudria's comments may have come from Mr. Terry Fenge, the executive director of the Canadian Arctic Resources Committee. In a letter to the editor of *The Ottawa Citizen*, Mr. Fenge wrote: "Behind each of these communications is a voter trying to register an opinion with an elected representative. Boudria should be thinking of ways to increase the quality and rate of flow of information between the electorate and the elected, not ways to stifle it."

Mr. Fenge's message goes beyond politics and government. It can be applied equally well to dentistry's elected leaders, and to the men and women who work for CDA, the provincial dental associations and local societies. All of us have a similar responsibility to maintain an open dialogue with our members.

It isn't always easy — none of us are mind readers. We depend on you, as members of CDA, to give us direction. If you think we are doing something wrong, drop us a line or give us a call. And if you think we are doing something right, we'd like to know that too. At least then we'll know where we stand.

Think of the last time one of your patients wrote you a letter — kind or otherwise — and then recall the effect it had on you and your office.

In any given year, the *Journal* receives scores of letters from dentists and allied dental personnel. We try to print them all — last year more than 50 letters were published in the *Journal* — but it's not always possible. We are careful to avoid letters that could lead to claims of libel or slander, and

modesty makes us shun those that are too laudatory.

We never publish anonymous letters, although twice in the past month we were tempted. One anonymous letter accused the editor of being blind and the other corrected his grammar. The readers were probably right on both counts.

We also prefer letters that are brief and to the point. At this very moment we are wondering what to do with a five-page letter on the hazards of mercury. It is not the topic we are concerned about, it is the sheer volume of verbiage.

Legibility is another problem. The letters we've received from one particular dentist now occupy their own folder in our file cabinet — and it's about two inches thick. Unfortunately, the pages and pages of material submitted by this dentist were faxed to us in a smudged, illegible form, and we have neither the time nor inclination to struggle through them.

Also, the message should be focused. Abortion and gun control aren't what CDA is all about. Dentistry is our game. The letter most likely to get our attention, find its way into the *Journal* — and hopefully be read — is one that is neat, succinct, and to the point.

Chesterfield (1694-1773), the writer and statesman whose claim to fame rests on a series of letters, written in a witty and graceful style, that describe the English aristocracy of the 18th century, probably best summed-up the art: "A letter shows the man it is written to as well as the man it is written by. Let your letter be written as accurately as you are able — I mean as to language, grammar, and stops; but as to the matter of it, the less trouble you give yourself the better it will be. Letters should be easy and natural, and convey to the persons to whom we sent just what we should say if we were with them."

Why not write your letter today.

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the*
Canadian Dental Association

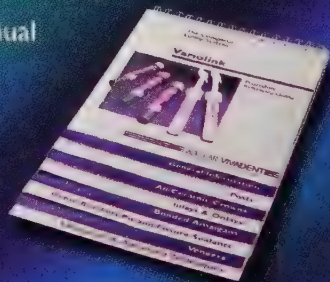
JOURNAL

May/
May
1995
Vol. 61
No. 5

NOW ACCEPTING ALL APPLICATIONS.

NEW INDICATION:
Metal Crown & Bridge Cementation

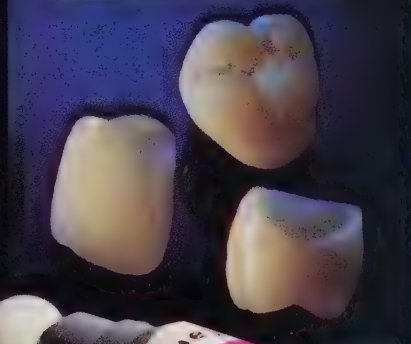
The Variolink system is now filling all luting applications. Precisely formulated for easy processing and a variety of clinical uses, Variolink is available in 2 consistencies and 3 shades to achieve optimal clinical requirements. And with compatibility with current bonding systems, proven fluoride release and the highest radiopacity of any resin cement — Variolink is the only luting system that applies itself to virtually all your needs. For best results, use the easy to follow Variolink manual for complete application instructions.



Veneers



Crowns



Inlays/onlays



Resin lined amalgams



INTRODUCING
VARIOLINK™

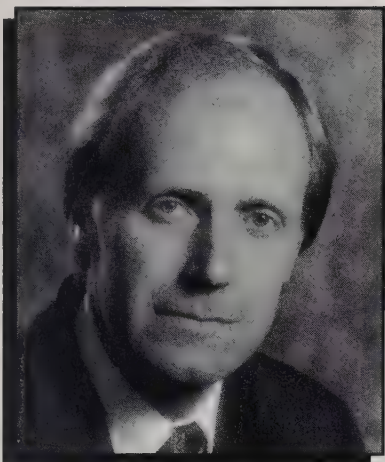
THE ALL PURPOSE LUTING SYSTEM

IVOCLAR VIVADENT
IVOCLAR NORTH AMERICA, INC.

For more information about Variolink or any Ivoclar Vivadent product, call us at 1-800-5-DENTAL in the U.S., 1-800-263-8182 in Canada.

PRESIDENT'S COLUMN

THE FUTURE OF THIRD-PARTY PLANS



Dr. Bryun Sigfstead,
President

Right from the outset of CDA's recent "Enough is Enough" campaign, we made it clear that a tax on employer-paid dental plan premiums would jeopardize the oral health status of Canadians.

If dental plans collapsed, we argued, dentistry would return to the treatment mode that prevailed during the '50s and '60s. The prevention mode, and the tremendous improvement that it brought about in the oral health of Canadians over the last 25 years, would become a distant memory.

It goes without saying that third-party plans are not solely responsible for the enviable position that Canada now enjoys in the world dental community. In the last quarter century we've witnessed technological and scientific advances that have virtually changed the face of dentistry. A case in point is the discovery of fluoride's decay prevention properties and its subsequent addition to both toothpaste and drinking water.

We've also been very successful at promoting the benefits of proper nutrition and good dental home-care. Our national and provincial dental awareness programs have clearly been effective, and our Dental Health Month message — "Good For Life" — is definitely being heard.

Despite the many advances we've made in both dental awareness and technology, however, access to dental care continues to be the most important component in the oral health equation, and nothing has provided more access or created more demand for dental services than the advent of third-party dental benefit plans.

We all breathed a collective sigh of relief last February when Finance Minister Paul Martin came to the end of his 1995 budget speech without having made even a passing reference to the taxation of employer-paid health and dental plan premiums. His silence marked a major victory for dentistry, and it removed a significant threat to the oral health of Canadians — at least for 1995.

Unfortunately, third-party plans are now facing another threat from an entirely new direction. Global competition has Canadian employers scrambling to reduce costs, and one of the things they're looking at is cuts to employee benefit packages, including high-cost items such as dental plans.

There's no question that dental plan costs have increased in recent years. As access to dental plans grew in the '80s, so did the demand for more sophisticated services. This has continued to put pressure on the plans, which, in turn, has driven up the costs incurred by both employers and individual contributors.

Now employers want to bring costs under control. What they're talking about is managed care, flex plans and bench marks, all of which would have a major impact on Canadian dentistry — and potentially on the oral health of Canadians.

It's a difficult issue to come to grips with for many dentists. As a health care provider, you're probably not sure what role organized dentistry should play in the evolution of third-party plans, and you wonder if you should get involved yourself. But if dentistry does nothing, if we tell ourselves that dental plans constitute a relationship between the patient, the employer and the insurance company, and that we, as dentists, are merely the providers of oral care services, we'll have to live with whatever change

occurs, even if it is detrimental to our patients and ourselves.

On the other hand, if organized dentistry gets involved in the process, it may be possible to find a win-win solution to the cost problem. The result would be a positive change, one that brings the costs of dental plans under control without compromising the oral health of our patients, or our own economic well-being.

Individual dentists have a role to play as well. We must be prepared to discuss the costs of services with our patients, and help them to become fully-informed dental consumers. In the long run, patients pay for the dental care they receive, regardless of whether they have a plan or not. Patients have a right to know, and usually want to know, exactly what costs they are incurring prior to accepting treatment. This allows them to make informed treatment decisions.

Equally important, patients may begin to have a better understanding of how their dental plans really work. They may even realize that their so-called dental insurance is really based on the principle of prepayment for dental treatment and spreading the costs out over time. If this happens, patients will also begin to understand that the treatment costs they incur can and will affect the status of their dental plan, and that they have a responsibility to themselves and their fellow plan participants for these costs.

On a higher level, CDA will host a national conference on the future of third-party plans this June. The goal of the conference will be to develop a unified position on third-party plan structure, as well as to consider possible solutions to the tax equity issue and other potential threats to the future of third-party plans.

Our ultimate goal, however, is to preserve the gains that have been made in the oral health status of Canadians over the last 25 years, and to continue to provide our patients with access to optimal oral health care.

*Bryun Sigfstead, DDS
President of the Canadian Dental Association*

JOURNAL

May/
May
1995
Vol. 61
No. 5

- Who really pays for "2.9%"?
- How much does "free" air conditioning cost?
- Where can I get a straight answer?



CDA Leasing... Straight Answers To Your Questions

CDA members enjoy substantial savings on new vehicles through our CDA Leasing program. Hundreds of members have taken advantage of this significant CDA Membership service since we introduced it in 1990, obtaining one or more new vehicles. CDA Leasing guarantees you the **best leasing value** in the marketplace.

We can help dispose of your existing vehicle. Lease documents are simple and straight forward, and financial terms can be tailored to meet your requirements. You can drive with no kilometer restrictions. We are here to serve you.

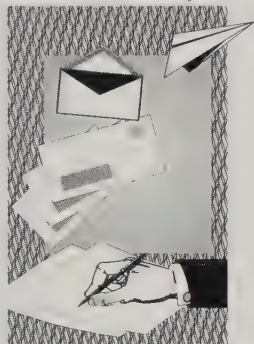
Please give us a call. **1-800-461-2923**



CDA LEASING

7100 Woodbine Ave., Suite 400, Markham, Ontario L3R 5J2 Telephone: (905) 477-5210, Toll-Free 1-800-461-2923

LETTERS



To Spit or Expectorate?

As medical director of a 500-bed long-term care facility, I have had the pleasure of working with a dentist and dental hygienist who care for the elderly and medically compromised. They have helped us to improve the mouth care we provide for our residents, and we are very grateful for this.

Recently, I asked the dental hygienist to share her profession's protocol for mouth care, so that we could more formally introduce it into our daily resident care process. I was very impressed with the hygiene protocols for the mouth care of edentulous residents with and without dentures, as well as for the care of those residents with teeth. I was astonished, however, to see that the word "expectorate" was used instead of "spit out" after oral cleaning. I gather that the dental community routinely uses expectorate instead of spit out in this context.

I reviewed *The Compact Editor of the Oxford English Dictionary*, and it defines expectorate as "To eject, discharge (phlegm, etc.) from the chest or lungs by coughing, hawking or spitting." *The Dorland's Medical Dictionary* is consistent with this. Their definition is "The coughing up and spitting out of material from the lungs, bronchi, and trachea." I gather

that *Webster's Pocket Dictionary* is much more liberal and provides "Spit from the mouth" as one definition of expectorate.

Growing up in a non-medical household, we were encouraged to expectorate or "get it off your chest" if we had a lower respiratory infection. All body builders and athletes, as well as most people interested in exercise, are aware of the pectoralis major and minor muscles on the front of the chest. These muscles are usually known as the pectorals or abbreviated to "pecs." I have asked some nurses, as well as occupational and physiotherapists, and they all used expectorate to describe raising secretions from the chest.

If the dental community wishes to integrate care provision with other health providers, I suggest that spit out or some more elegant phrase be substituted for expectorate, as the word can be confusing. Some of your non health-care worker patients will also find the word misleading.

We will implement these protocols for mouth care with only one modification, spit out for expectorate.

M.R.J. Addison, MD
Bethany Care Centre,
Calgary, Alta.

Participation

Thank you very much for the "no charge" advertisements we have been receiving in the *Journal of the Canadian Dental Association*. Participation is extremely grateful for this exceptional public service, and thank you for supporting our efforts to encourage Canadians to be physically active. The mass media across the country have been our partners for 23 years, promoting active, healthy lifestyles, and our success is a direct result of organizations like yours who believe in our message.

Nanci Colbeck
Director, Communications and
Community Programs
Participation

Informed Consent

The article "Consent — Is It Informed and Valid" published in the March 1995 issue of the *Journal* (Dunn, W.J. 61(3):233-234, 1995) is important for all dentists to consider. Dr. Dunn is to be thanked for taking the time to prepare it.

However, Ontario dentists may want to further examine the content of the second to last section of the article entitled "minors." This spring, the Ontario government will enact legislation known as the Consent To Treatment Act — Bill 109, along with two companion acts, The Substitute Decisions Act and the Advocacy Act.

It would appear that the Consent to Treatment Act (CTA) invalidates some of the statements made by Dr. Dunn with respect to the treatment of minors. The CTA does not recognize minors nor refer to any age of consent (with the exception of individuals who are found to be mentally incapable).

Essentially, this Act states that as long as an individual has "capacity," only that person has the right to consent. In a document highlighting the Act, the statement appears "If a person who would get the treatment is mentally capable of making the treatment decision, that person decides." This direction is influenced by the notion of "material risk." If a treatment has no material risk, a very young child could consent (e.g., for an examination).

In order to accept consent, the dentist would need to be assured that the patient appreciates the two requirements of capacity: does the person understand the information about the proposed treatment; and does the person understand the consequences of accepting or refusing the treatment?

Following this concept, the assistant deputy minister of health affirmed that "A parent cannot veto a decision about a treatment which has been made by a child

JOURNAL

May/
Mai
1995
Vol. 61
No. 5



who has the capacity to make his or her own decision."

Some of this direction is not new. Rozovsky and Rozovsky, in their book *The Canadian Law of Consent to Treatment*, 1990, state: "When a child is capable of giving consent, the child is to be regarded as an adult for the purposes of treatment. Therefore, no other parties such as parents need to be asked for their consent."

This topic needs discussion and dissemination to Ontario dentists in order to provide guidelines for the profession. For example, what if the child consents to treatment, but the parent/guardian refuses to pay? What if the treatment is necessary (critical), the child has consented, but the parent/guardian will not provide a medical/dental history? Where does the dentist stand if the parent/guardian insists on treatment and the child, who passes a test for capacity, refuses treatment? Does it make any difference if the child is a ward of the Children's Aid and refuses treatment?

The implications of the CTA may seem new to both dentists and the public, but it breaks no new legal ground and is a reflection of present common law. Dentists need to become more conversant with this legislation.

*T.W. Hicks, DDS, DDPH
Director of Dental Services
Simcoe and Muskoka Parry
Sound Health Units*

My Teeth

I first saw Joanna in 1990, when at six years of age she required the removal of an impacted mesiodens. What followed were multiple visits for pre-emptive serial extractions due to extreme crowding. Joanna and I persevered (she once showed up with masking tape covering her mouth) and at her last visit she presented me with a poem. I think it is worthwhile sharing this mature young lady's poem with fellow dentists, as it shows the value of educating children about the benefits of treatment:

*I was once a cute little girl,
But then my mouth began to whirl!
They kept appearing here and there
Grotesque shapes were everywhere!
There were more and more, underneath,
Oh my God! They were my teeth!
Dr. Freedman pulled them out
One by one, pout by pout.
Hey, the pain wasn't that bad
But afterwards I should have been glad
But no, no, no, I was still sad,
Strangers came up to me and said
"Whatever happened to your teeth?"
I ran home up to my warm bed
I thought of pulling out all my teeth,
But no, I said, I'll have to deal
I need those teeth for every meal!
When someone tells me that
my teeth are screwed up
I scream and yell at them to shut up.
Well, the story ends, much to my sorrow
with **MORE** teeth pulled out
the day after tomorrow
But even if there's a bit of pain
I know I have a lot to gain.*

— Joanna Haber, 11
February 14, 1995

*Gary L. Freedman, DDS, MSD,
FRCD(C)
Montreal, Quebec*

In Communiqué This Month . . .

- **CDA Board Approves National Conference on Third Party Plans**
- **New Directions Seminar Series Launched**
- **CDA Takes Leadership Role In Examining the Future of Dental Education**

Special Features

- **Students' Corner: Report From Pakistan - Part II**
- **Profile: Dr. Tom Breneman and Dr. Louis Dubé**
- **Personal Finances: Universal Life - Not Universal Appeal**

... and more

Look for these stories and more in the May/June issue of Communiqué. CDA members receive Communiqué six times per year in the language of their choice as a benefit of membership in CDA. To join Your National Association, call: 1-800-267-6354.

JOURNAL

May/
Mai
1995
Vol. 61
No. 5



On The Biting Edge.

DENTSPLY has been the market leader in prosthodontics for the past 75 years.

We got there by offering such outstanding products as Trubyte Teeth, including a mould and shade system that provides the most complete line of personalized options available — with strong wear resistance and superior aesthetics. Triad, Jeltrate and Lucitone 199 are all equally recognized as the highest quality materials.

It isn't only innovative designs and materials that's put us out front.

We offer the largest inventory of teeth in Canada. We also offer a range of services for dental care professionals second to none. Such as our tooth return policy. Chairside tools, and shade and mould guides. The most extensive distribution network in the field. Plus ongoing technical bulletin information.

At DENTSPLY, we've always believed in giving you more to work with. And we always will. Maybe that's what gives us more bite as committed partners in dental healthcare.

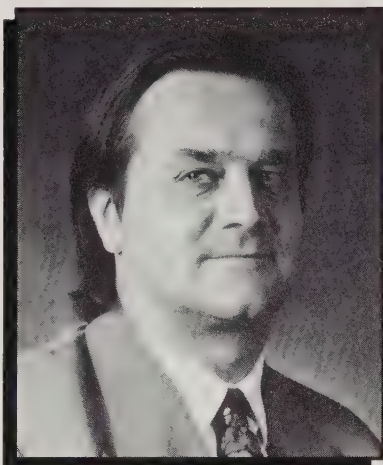
Laboratory Division

DENTSPLY
CANADA

Offering you the full treatment.

NEWS UPDATE

McGill Appoints New Dean



Dr. James Lund

McGill University has appointed Dr. James Lund as dean of the faculty of dentistry, effective June 1.

A highly respected authority in the field of neurophysiology, Dr. Lund joined the faculty of dentistry

at the Université de Montréal in 1973, and was appointed full professor in the department of stomatology in 1981. He is currently the associate dean of research.

Dr. Lund received his dental degree in Australia in 1966 and his PhD from the University of Western Ontario in 1971. His appointment at McGill University is for a five-year term. ■

Dr. Frank Popovich Dies At Age 71

Dr. Frank Popovich, a well-known orthodontist and the former director of the Burlington Growth Centre, died at the Hamilton General Hospital March 6.

Born in Czechoslovakia on November 2, 1923, Dr. Popovich attended high school in Toronto. He subsequently received his DDS degree from the University of Toronto in 1951 and his M.Sc.D. (orthodontics) from the same school in 1953.



Frank Popovich, DDS, M.Sc.D., FRCD(C), 1923-1995

Dr. Popovich was inducted as a fellow in the Royal College of Dentists in 1967. He was associated with the University of Toronto's faculty of dentistry throughout his distinguished career, and was appointed professor emeritus in 1989.

Following his 1951 graduation, Dr. Popovich began a private orthodontics practice in Burlington, On-

Three Dental Classmates Compete in World Triathlon

After more than 17 years in practice, three dentists from the University of Toronto's 1977 graduating class were reunited recently as members of the Canadian triathlon team.

Drs. Eric Piscopo, Steve Burrows and Mike Bulger represented Canada at the ITU World Triathlon Championships in Wellington, New Zealand, November 27, 1994, competing in the 40 to 44 age class.

All three dentists have long backgrounds as serious athletic contenders. Dr. Piscopo is a six time winner of the Ontario Dental Association Fun Run and is current champion. Dr. Burrows has participated in over 300 sporting events and has completed eight Ironman distance triathlons. Dr. Bulger, a former "couch potato" lost 50 pounds after he recruited a team of dentists, the Ontario Molar Millers, to participate in the annual Jasper Banff Relay Race.

The triathlon, consisting of a 1.5 km swim, a 40 km bike ride and a 10 km run, will be a full medal sport at the 2000 Olympic Games in Sydney, Australia. ■



University of Toronto grads (l. to r.) Drs. Steve Burrows, Eric Piscopo and Mike Bulger are reunited as members of the Canadian Triathlon Team in Wellington, New Zealand.

Taxation of Unincorporated Dentists

The recent federal government budget propose that dentists with a fiscal period ending on a date other than December 31 will be required to change their fiscal year-end to this date effective on December 31, 1995.

It is common for many unincorporated dentists to have their practice year-end occur on January 31. For tax purposes, the date on which the fiscal year ends determines the calendar year in which the income is reported. All of the income earned during a practice year that ends on January 31, 1995 is reported on the dentist's 1995 tax return, which is filed in March or April, 1996.

The new proposal requires that every unincorporated dentist's 1995 tax return include income for the normal fiscal year-end and income for the balance of 1995. For example, a dentist with a January 31 year-end will report the following income on his or her 1995 tax return:

Assume net income is \$156,000 annually (\$13,000 monthly):

Normal fiscal year income:

February 1, 1994, to January 31, 1995	\$156,000
---------------------------------------	-----------

Balance of 1995 income:

February 1, 1995, to December 31, 1995 (11 months at \$13,000)	\$143,000
---	-----------

Total income to be reported on dentist's 1995 tax return	\$299,000
---	-----------

The additional income will be taxed at the highest marginal tax rate, which in most provinces is between 50 and 55 per cent. Consequently, the budget proposal will increase the dentist's 1995 tax in the above example by about \$72,000. Note that a January 31 year-end is the one most adversely affected by the change. The effect on year-ends subsequent to January 31 is reduced because fewer months of additional income have to be added to the 1995 return.

In recognition of the financial hardship that the increase in tax will cause, the government has proposed a transitional rule intended to spread the tax burden over the next 10 years. The formula requires the balance of 1995 income (\$143,000 in the above example) to be reported on the following schedule:

- In 1995 five per cent
- From 1996 to 2003 10 per cent each year
- In 2004 15 per cent

The effect of the transitional rule is to spread the requirement to pay this tax over the next 10 years. In

the preceding example, the \$72,000 payable on the February to December 1995 income will be payable on the following schedules:

- In 1995 \$3,600
- From 1996 to 2003 \$7,200 each year
- In 2004 \$10,800

However, the transitional rule ceases to be available in the year in which the dentist ceases to practise, and the balance of the unpaid 1995 tax becomes due in that year. Cessation to practise will occur if the individual dies, retires, becomes disabled or incorporates the practice.

In the above example, if the dentist ceased to practise in the year 1999, he or she would pay tax in that year as follows:

balance of 1995 income	\$143,000
------------------------	-----------

Less: reported in 1995	\$3,600
------------------------	---------

1996 to 1998 (3 x \$7,200)	\$21,600
----------------------------	----------

Balance of 1995 income to be added to 1999 income	\$117,800
--	-----------

Estimated tax in 1999	\$59,000
-----------------------	----------

In addition to the obvious disadvantage of having to pay additional tax in each of the next 10 years, there are two less obvious disadvantages to the proposal. First, because the 1995 income is being added to normal income, it will be taxed at the maximum rate. Under the old rules, the deferred income was taxed in the year after retirement and was subject to the normal graduated tax rates in that year. Second, by accelerating the reporting of income, the dentist will not report dental income in the year after retirement and may lose the ability to make a tax deductible RRSP contribution for that year.

On the positive side, the proposal does represent a form of forced retirement planning in that a dentist who retires after 2004 will not be faced with the requirement to pay any deferred taxes, as all such taxes will have been paid by that year. ■

Mr. Ron Walsh, CA, Walsh-King, Vancouver.

Dr. Robert Hicks,

Chairman CDA Taxation Committee

tario. Over the years that followed he received acclaim and recognition for his long-time association with the Burlington Growth Centre and the department of orthodontics at the University of Toronto.

The Burlington Study amassed growth and development data from 1,380 children and 312 parents for

the period 1952 to 1971. These findings contributed to a better understanding of the variations of normal and abnormal facial growth patterns, which prompted changes to both undergraduate and graduate teaching programs in many schools of dentistry and in other related health fields.

Dr. Popovich was also an integral contributor to the development of the Canadian Standards Association headforms used to test hockey helmets, face masks and other sports equipment for protecting the eyes and face (New Headform Developed, "News Update," *J Can Dent Assoc* 59:971, 1993). ■

Task Force On Dental Education Established

CDA has established a new task force to review current issues and trends in dental education and report on the future direction of dental education in Canada.

The Task Force On Dental Education is expected to involve a number of fact-finding initiatives, including conferences and projects designed to seek input from interested professional and educational groups. These activities will be directed by an eight-member steering committee chaired by Dr. David Donaldson of Vancouver. Dr. Donaldson is also the chair of CDA's council on education.

An introductory conference is planned for August 27 in Ottawa, following CDA's annual board of governors' meeting. Although details of the conference are still being finalized, it is anticipated that the program will include speakers on epidemiological and international trends, as well as a panel discussion on recent initiatives to integrate the faculties of medicine and dentistry at Canadian universities.

The steering committee also plans to conduct a literature review on the current issues and trends in dental education.

For more information on the task force, contact: Dr. David Donaldson, Chair, Steering Committee on the Future of Dental Education, c/o Canadian Dental

Association, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6. ■

Canada Health Day 1995

Canada Health Day 1995 will be celebrated by hundreds of hospitals, community health organizations, health units and private citizens on May 12.

The day, which marks the anniversary of Florence Nightingale's birth, will see a full range of activities at the community level, including tours of health care facilities, fun runs, and educational sessions.

Promotional materials and information on Canada Health Day 1995 are available from the Canadian Public Health Association, 1565 Carling Ave., Suite 400, Ottawa, Ont. K1Z 8R1; Tel. (613) 725-3769. ■

RCDC Celebrates 30th Anniversary

The Royal College of Dentists of Canada (RCDC) is 30 years old.

Founded March 18, 1965, by an Act of Parliament, RCDC held its inaugural council meeting in May 1965, three years after CDA's board of governors approved a motion from the committee on specialists and specialization calling for the establishment of a Royal College of Dentists. The new college was to have four clear and simple objectives: to promote high standards of specialization in the dental profession, to set up qualifications for and provide for the recognition and designation of properly trained dental specialists, to encourage the establishment of training programs in the dental specialties in Canadian schools, and to provide for the recognition and designation of dentists who possessed special qualifications in areas not recognized as specialties.

In 1965, there were five recognized dental specialties in Canada — oral and maxillofacial surgery, orthodontics, endodontics, pediatric dentistry and periodontics. Today there are nine, with the inclusion of oral radiology, dental



RCDC's 1994-1995 officers (l. to r.): Dr. Guy Maranda, past-president; Dr. Keith Titley, registrar; Dr. John McComb, president; Dr. Michael MacEntee, vice-president; Ms. Kay Montgomery, executive director; Dr. John Fraser, council representative; and Dr. Charles Baker, examiner-in-chief.

public health, prosthodontics, and oral pathology.

Dr. Frank A. Smith of Vancouver, the first president of RCDC, presided over the first meeting of the college's newly elected council in September 1965. He was joined at the council table by Dr. A.A. Antoni of Toronto, the first registrar-secretary-treasurer of RCDC. Less than a year later, on May 14, 1966, the college held its

first convocation, and awarded diplomas to 98 charter fellows.

Today, approximately 50 per cent of Canadian dental specialists have successfully completed their RCDC examinations and are recognized as a fellow or member of the college, and the RCDC fellow and member designations are recognized by most institutions and licensing bodies. ■

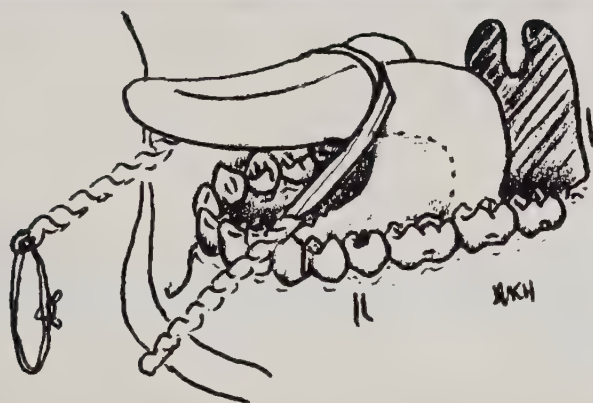
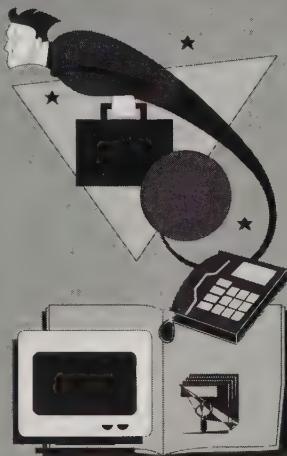
"WHAT'S IT?"

We thank the readers who informed us that the mystery item displayed in the March issue of the *Journal* is a tongue scraper. Particular thanks to Rosemary Schellenberg of Portage La Prairie, Manitoba, and Dr. Todd Lee-Knight of Edmonton for their

detailed descriptions, as well as to Dr. Bill Hettenhausen of Thunder Bay, who not only explained the scraper's use but included the excellent drawing displayed below.

What's It? continues to seek information on the "Firefly" revolving toothbrush that was

described in the February 1995 issue of the *Journal*. Can readers help us identify the manufacturer and the use of this particular brush? Please write to Dr. Ralph Crawford, Editor, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa ON K1G 3Y6. ■

**LIBRARY PACKAGE**

The library package for May is: **ANTIBIOTIC THERAPY IN DENTISTRY.**

This package is available to CDA members for a fee of \$5. Call the CDA Library at: 1-800-267-6354 ext. 223; or fax your request to: (613) 523-6574.

New Books And Videos In The Library.

Each of the following can be borrowed by CDA members for a \$5 shipping fee.

Harvey, L. [1st researcher]. et al. *The health of Canada's children*. 2nd ed. Canadian Institute of Child Health: Ottawa, 1994.

Greenspan, J.S. and Greenspan, D. *Oral manifestations of HIV infection*. Quintessence: Chicago, 1993.

Marti, J.E. *Alternative health medicine encyclopedia*. Visible Ink Press: Detroit, 1995.

Mathewson, R.J. and Primosch, R.E. *Fundamentals of pediatric dentistry*. Quintessence: Chicago, 1995.

ERRATA

In the March issue of the *Journal* (Vol. 61, No. 3), the French Sommaire published with the article "Immediate Implant Post-Surgical Complications" by C.G. Ibbott and R.D. Oles (pp. 193-198) was transposed with the French Sommaire published with the article "Effectiveness of a Topical Antifungal Regimen for the Treatment of Oral Candidiasis in Older Chronically Ill, Institutionalized Adults" by D.W. Banting, P.A. Greenhorn and J.G. McMinn (pp. 199-205). The *Journal* regrets the error, and apologizes for any confusion it may have caused. ■

JOURNAL

May/
Mai
1995
Vol. 61
No. 5



Assessing Investment Funds For Your RRSP

Anyone who monitors the performance of their own RRSP funds can't help but wonder at the possibilities when another financial company advertises a fund return that's double the market average. You may question whether your money's in the right place, and even seriously consider transferring your future nest egg to the hot fund. But is it really wise to switch your money based on the latest fund results?

The truth is, evaluating a fund involves much more than looking at its previous year's performance. In fact, most experts name three essential assessment criteria: past performance, volatility, and fund manager.

Long-term past performance is generally reliable, because the fund manager must have a system that works if the fund has done well over time. Some investors search for a fund that's performed well in past periods under the same market conditions prevailing today. There's no guarantee that future fund performance will match past performance, of course, but at least it's a method based on logic.

Performance is rated by the performance figure — a fund's rate of return. For periods above one year, these figures represent the average annual return compounded. Monthly performance

tables in the *Globe and Mail* "Report on Business" list performance figures covering short-term changes, as well as one-year, three-year, five-year and 10-year annual compound rates of return that assume all income is reinvested. Not all financial journals list 10-year performance figures.

There are other sources of fund performance — such as computer software packages and quarterly books that include further fund information — but for most investors monthly performance tables are the bible.

For the most part, professionals in the fund business advise investors to pay attention only to longer-term rates of return. Investment experts often suggest looking at a 10-year period, and stress that falling for impressive short-term gains is one of the most common investment mistakes. Time after time, investors get trapped into buying units of a fund that's just had an exceptional year, only to see unit values plummet when market conditions change in the next year. And when that happens — which is quite often — you seldom come out ahead. For example, if a hot fund boasts a 25 per cent return one year, then has a negative five per cent return the next, it would have a lower total return than a fund that recorded

a 10 per cent return in two consecutive years.

There are a couple of exceptions to these performance guidelines. Some of the investors who choose more volatile specialty funds base their decision on short-term performance. They want to get in while the fund is hot, and only stay in for a short time. But this investment style doesn't usually apply to RRSP participants, who generally commit to a fund for a longer time period, given the need for security in RRSP investing, and its long-term nature.

Another exception is when investors go against the advice of seeking out consistent performers. These investors buy funds that have good long-term performance but below-average recent performance, based on the expectation that the fund is due to improve. This can be a chancy strategy, however.

Choose Lower Volatility

Volatility is the second criterion used in evaluating funds. You'll find fund volatility listed on the monthly performance charts. If you have to decide between two funds with similar long-term performance, it's best to go with the less volatile one. Stability is the watchword when you're investing in a long-term

savings plan for your retirement nest egg.

The final criterion is the fund manager. In certain cases, some investment professionals place more emphasis on the manager than on a fund's past performance — for example, when a new manager with an exceptional track record takes over an existing fund. In the case of an entirely new fund, the only way to make a judgment, basically, is to assess the fund manager's track record with other funds.

Clearly, you shouldn't choose a fund just because it has one or two outstanding years. But should you drop a fund after it has posted one or two under-av-

erage years? The answer is usually no. At some point, every manager makes a decision that hurts fund performance. The important thing is that the manager corrects for errors in judgment quickly and regains their stride. From the perspective of the investor, it's generally better to wait it out. Otherwise, you could switch to another fund only to see your new choice under perform as well.

Most professionals say to allow at least three to five years to assess a fund manager. If you wait out this period, and your fund is still performing well below the market average for its category, it's time to investigate.

And unless you're reassured by the fund manager that the future looks bright, you would have good reason to consider switching.

Applying the Assessment Criteria To the CDA RSP Funds

All of the CDA RSP longstanding funds have very good 10-year performance records. Consider the standings for the 10-year period ending February 28, 1995, as listed in the March 12 edition of the *Toronto Star*. The CDA Common Stock Fund ranks in the top 15 per cent of Canadian equity funds (with an an-



CDA RETIREMENT SAVINGS PLAN

✓ Check Out Superior Investment Performance

CDA Fund Performance (for periods ending March 31, 1995)[†]
(Checks indicate Superior Performance Compared to Industry Averages*)

CDA Fund	1 Year		3 Year		5 Year		10 Year	
	CDA	Other*	CDA	Other*	CDA	Other*	CDA	Other*
Aggressive Equity	-15.1%	-8.8%	n/a	n/a	n/a	n/a	n/a	n/a
Common Stock	-5.9%	0.2%	10.0%	10.2%	✓ 7.3%	7.1%	✓ 10.0%	8.4%
Balanced	0.0%	2.5%	8.1%	9.1%	8.5%	8.8%	✓ 9.5%	8.5%
Bond & Mortgage	3.7%	4.4%	✓ 8.7%	7.9%	✓ 11.1%	10.3%	✓ 10.4%	10.3%
Money Market	✓ 5.8%	5.0%	✓ 5.4%	4.9%	✓ 7.4%	7.0%	✓ 8.4%	8.1%
International Equity	✓ 4.5%	-0.6%	n/a		n/a		n/a	
European	✓ 15.8%	3.1%	n/a		n/a		n/a	
Pacific Basin	✓ 0.1%	-4.0%	n/a		n/a		n/a	
Emerging Markets	✓ -8.0%	-24.2%	n/a		n/a		n/a	

[†] CDA figures indicate annual compound rate of return with all fees deducted. The figures are historic rates based on past performance and are not necessarily indicative of future performance.

* Comparison performance figures are Globe and Mail averages for the range of similar funds offered in the marketplace before sales charges, as published in the April 20, 1995 issue.

For current unit values and GIC rates call CDSPI toll-free at: 1-800-561-9401, ext. 525.
(Metro Toronto call: (416) 296-9401.)



JOURNAL

May/
Mai
1995
Vol. 61
No. 5

nual compound rate of return of almost 10 per cent over 10 years), the CDA Balanced Fund ranks in the top 30 per cent in its category, and the CDA Money Market Fund ranks in the top 25 per cent in its category. The CDA Bond & Mortgage Fund has posted the highest return of all the CDA RSP funds for the 10-year period ending February 28, 1995 — 10.4 per cent. You can monitor CDA RSP fund performance in newspaper tables, or by calling CDSPI's update line (1-800-561-9401, or (416) 296-9401 in Metro Toronto, extension 525), or you can check out the CDA Retirement Savings Plan's new summary table in each issue of the *CDA Journal*.

Fund volatility is rated High, Above Average, Average, Below Average, and Low. For RRSPs, lower and average volatility ratings are preferred over higher volatility ratings. Again, the CDA RSP's longstanding funds have performed very well overall from a volatility standpoint. The Bond & Mortgage Fund rates Low, the Money Market Fund rates Above Average, and both the Common Stock Fund and Balanced Fund rate Below Average on the volatility scale.

Fund management is another CDA RSP strength, thanks to the plan's ability to seek out fund managers who specialize in each fund category. The acclaimed Altamira Management, for example, manages the Common Stock Fund and Aggressive Equity Fund.

Past performance, volatility and the fund manager are the factors you must ultimately examine when assessing an RRSP. So to return to the original question — whether you should transfer your nest egg to a hot fund — the answer is a resounding no. When it comes to retirement planning, it's extremely important not to blindly follow your emotional response, but to follow the advice of investment professionals. ■

CDA MUSEUM donations requested

Memorabilia from CDA's 92-year history is now on display in antique cases in the library of the Canadian Dental Association headquarters in Ottawa.

As originally planned, the displays are changed on a regular basis to suitably depict different eras of our rich dental history. Donations of museum-quality dental artifacts are still being accepted and are very much appreciated. Particularly requested are larger items such as chairs, units, cabinets and X-ray machines, plus historical photos and records.

Also of interest to dental historians are the items highlighted in the column entitled "What's it?" which appears monthly in the *Journal*. This column elicits the help of readers in identifying some of the antique items presently on location in the museum.

For further information, contact Dr. Ralph Crawford at the Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6. (613) 523-1770, or call toll-free 1-800-267-6354.

There Is An Alternative To High Priced Computer Systems!

Canadian dentists coast-to-coast have used MaxiDENT dental management software for twelve years with immense satisfaction. Canada's Easiest-To-Use dental system handles billings, receivables, claims, CDAnet EDI, statements, recalls, practice marketing, and much more, and gets better with every update!

MaxiDENT includes an electronic appointment scheduler, two word-processors, a step-by-step illustration-packed User's Guide, AccPac Payables, Payroll, and General Ledger plus a free upgrade to our new Windows version.

Reliable, proven, DOS-based, multi-user, multi-tasking MaxiDENT runs on IBM compatibles and outperforms systems costing many times more. It can be used with Microsoft Windows, and never needs costly Unix or Xenix.

MaxiDENT is so easy to learn and use, just follow our instructions and run it in your office within days. Or choose low-cost professional on-site training. Either way, you have a full year's support which includes unlimited toll-free hotline help and free updates. No wonder Oral Health called MaxiDENT Canada's best kept secret!

When you order MaxiDENT software, we help you get your best price on computer equipment from your local vendor, or us. Save thousands of dollars and join a growing list of satisfied users.

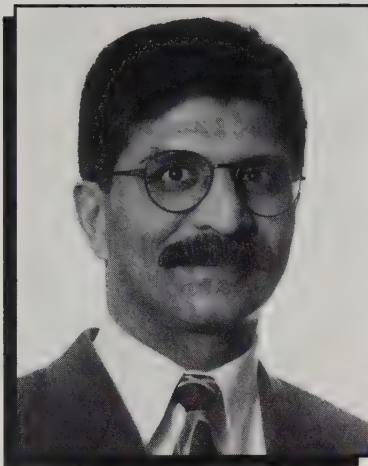
Don't be fooled by its low price of only \$4995. Learn why patients, staff and dentists love powerful MaxiDENT, how it saves time, eliminates bottlenecks, relieves stress, makes you money, and has important tax advantages. Phone toll free now without obligation for an information package, user list and demo disk.

Call Arthur Arkin, President, Maxim Computer Systems, developers of

MAXiDENT Dental Management Software



1-800-663-7199



Making A Good First — And Lasting — Impression

Imtiaz Manji, B.Sc.

Principal of ExperDent

We've heard all the adages: You've only got one chance to make a good first impression; First impressions are lasting; Put your best foot forward . . . Clichés abound when it comes to emphasizing the window of opportunity we have in our initial contact with others. Perhaps the abundance of such maxims reflects just how important it is to ensure that we take advantage of such opportunities, because the window gets shut all too quickly. Rightly or wrongly, it's human nature to make judgements almost instantaneously.

If this sounds harsh, just think about how you make assessments in your everyday life — and how these opinions or intuitions influence all that follows. How many of us have been at a cocktail party where we've had a brief conversation with a new person, only to turn around and discuss our opinion about him or her on the way home from the party? "Jane is a real snob," might be one such comment. But perhaps Jane isn't a snob at all — perhaps she's extremely shy. This example illustrates how we tend to peg people before they've really had a chance to demonstrate who they are, be they snobby, shy, aggressive, passive, etc. Unfortunately for Jane, this first impression of her will be hard to shake unless she's given

repeated opportunities to prove it wrong.

That's why first impressions are so critical. They may be our only chance — our window — to convey what we're really about. In our personal and professional lives, we are never guaranteed repeated exposure. If we blow it in the eyes of others, we can forego tremendous opportunities.

The dental environment is no different. For better or for worse, each and every interaction between a patient and a practice is imprinted in the patient's mind. And though you — the dentist — are often the last person patients see, the impression clock starts ticking well before patients ever get to your operatory. The experiences and interactions leading up to the patient-doctor meeting have a profound impact on your ability to build a reputation for providing quality, caring dentistry.

Professional Decorum

A friend of mine relayed an interesting story to me recently. His wife had an early morning appointment at the ophthalmologist, so he offered to accompany her. While his wife was seeing the doctor, my friend took a seat in the reception area where two of the ophthalmologist's staff were stationed. The women were discussing events of the previous night within earshot of my friend — an exchange which he said was

rather detailed and revealing. In the middle of this conversation, the practice telephone rang. My friend then witnessed a shocking event: one of the woman picked up the phone and put the caller on hold so she could finish telling her story.

Unfortunately, the ophthalmologist in the above scenario is unlikely to be aware of the attitudes of these staff. But consider the implications of this unprofessionalism. My friend was privy to a personal conversation that shouldn't have taken place in a professional setting (unless it could occur in private) and a patient — perhaps even a new patient — was put on hold unnecessarily. It's not exactly the way to make a good impression.

I never asked my friend what the woman was like when she did return to the caller, but given her behavior up until this point, I have a hunch she wasn't a textbook example of the model receptionist. The major prerequisites for a receptionist — being polite, helpful and available — were somehow lost on this particular woman. She failed to realize that the front desk area is the "training ground" for new patients; they are all eyes and ears, seeing and listening to all that transpires. If a patient calls to cancel an appointment or walks out unscheduled, complaining, or with their account unpaid, it's noticed.

Although this example may be the exception rather than the rule (let's hope), it illustrates how quickly — and profoundly — a whole host of impressions can be made about a practice without the dentist or doctor ever contributing to them.

When it comes to office decorum, many practices need to be much more sensitive today than they were in the past. Not that it was ever acceptable to behave unprofessionally. But today, with the prevalence of open concept designs, the barriers between staff and patients (or between patient and patient) have been reduced. Although open concept offices can be highly functional and esthetic, they do bring new challenges.

Along with the welcomed absence of sliding windows in the reception area and the dominance of open operatories — avenues for heightening communication and movement throughout the practice — should come increased sensitivity. This means that your staff must wait until they're in private quarters, such as a closed lunch room, to discuss what went on the night before; that case presentations and financial arrangements are discussed in a consultation room (not in open operatories); and that staff behavior demonstrates the embodiment of honed customer service skills at all times.

Over the Telephone

I won't get into a detailed discussion here about ensuring that your receptionist has a professional telephone manner as a previous column was dedicated entirely to this subject.¹ But I will reiterate that the first contact with your practice cannot be given too much importance. If you recall situations in which you've been spoken to rudely or put on hold indefinitely, you know that this contact can influence your decision to take your business elsewhere. If you're unsure of how your practice rates on this point, have a few friends or colleagues dial up your receptionist. Then they will be able to give you the straight goods.

Person to Person

If you've successfully leapt over the first hurdle — the telephone

contact with a patient — your next opportunity to impress comes when patients arrive for their appointments. Obviously, a pleasant, smiling, professionally dressed greeter is expected by patients. (I highly recommend uniforms and name tags.) But what might not be expected — though it would be highly valued — is any information that is relevant to the patient's visit. If the doctor is running behind, the patient should be told, given an estimate on how long the wait will be, and presented with the option of remaining or rebooking. Although most patients will be inclined to wait, the respect you demonstrate by keeping them informed and giving them options says a great deal. It indicates that you value their time and recognize that their lives are busy; a delayed appointment can throw a curve ball into their daily plans.

Creating an Environment

The personal contact, be it on the phone or in person, is definitely important in creating good first and lasting impressions. But some practices fail to realize the impact that the physical environment plays in this equation. All the politeness, helpfulness and professionalism will ring hollow if the surroundings are unpleasant, unclear or tired.

Part of the problem with assessing your environment is that you and your staff are too close to it. The familiarity often blurs objectivity (or any insight about what your ambience is conveying altogether). In the day-to-day routine of practising dentistry, it's natural to become task-oriented and to lose perspective of how patients view your practice, in the physical sense.

Unfortunately, some of those practices that do manage to stand back and objectively assess the image they're creating with their surroundings seldom do anything to enhance it. They worry about investing in the physical environment for fear of a patient backlash, believing that patients may wrongly correlate an increase in dental fees with a need/desire for redecorating. As such, they err on the opposite end of the continuum

and let the surroundings go. However, this only backfires in the end. Few patients want opulence in the office — particularly with the nineties emphasis on simplicity — but they do want a clean, warm, comfortable environment.

The reception area should be welcoming in the same way that a home's living room invites you in; the seating, lighting and reading material should combine to put them at ease. Other suggestions for conveying your caring attitude and professional credibility include: hanging staff photos and profiles on the wall; prominently displaying notes of praise or thanks from satisfied patients; making beverages, such as juice and purified water available; soliciting patients' opinions through anonymous surveys; and exhibiting patient "before and after" photos. (This last recommendation can work wonders in demonstrating the pride and commitment you have in providing quality dentistry.)

Measuring Your Success With First Impressions

How do you know if you've managed to impress patients? Well, if they only visit your practice on one occasion, you can take that as a clear sign that you haven't scored enough points.

The best way to determine how you're doing in image-building is to hold up a mirror to your practice. A year or so after each new-patient visit, find out whether the patient is "current" — coming in for recommended hygiene, accepting treatment presentations, etc. Hopefully, you won't be in for a shock.

Given that a whopping 95 per cent of new patients must be retained to keep a healthy practice afloat, practices must realize that all the energy spent on first impressions must be carried through on each patient visit. Because even though first impressions are lasting, the good ones need constant nurturing to be maintained.

References

1. Manji, Imtiaz. Putting Your Best Phone Forward: Effective Use of the Telephone. *J Can Dent Assoc* 60:283-284, 1994.

S Y S T E M S F O R S U C C E S S

PROOF POSITIVE

HELIOMOLAR RANKS #1*

A recent independent research institute study confirms what thousands of clinicians have experienced in more than ten years of clinical use: Heliomolar outperforms. It ranked #1 over 21 different restorative materials, including direct and indirect resin, amalgam and porcelain. Not only does Heliomolar offer superior wear resistance, it also provides outstanding color stability and color match. Its beauty and high enamel-like polish make it ideal for anterior use. Plus Heliomolar is the only microfil that provides fluoride release and is ADA Accepted.

*CRA Newsletter, Vol. 18, Issue 5, May 1994.

HELIOMOLAR®

UNIVERSAL MICROFIL

IVOCAR VIVADENT
IVOCAR NORTH AMERICA, INC.

For information on Heliomolar or any other products in our system, call us toll free at 1-800-5-DENTAL in the U.S., 1-800-263-8182 in Canada.

Not everyone who buys a Saab is thinking straight.

The shortest distance between two points may be a straight line. Nevertheless, a Saab 900 owner almost always chooses to put his or her signature on every stretch of winding road.

Perhaps that's because everything about a Saab is designed to let you focus your attention on the next bend. From our unique Black Panel instrument function and headlamp washers to our pollen filter and heated front seats.

And no matter which road you choose, Saab provides a safe, comforting haven for you and four others, with side impact beams, crumple zones and dual front airbags.

Of course, a car is neither safe nor satisfying unless it responds. And so the Saab delivers, with a potent 2.3L engine,

a 2.0L Turbo or a 2.5L V6 powerhouse.

To harness all this under the hood, the stopping power of ABS brakes is standard on every 900. And traction control is standard on every V6 model.

Along with everything else you'd expect from a luxury car, Saab gives you your choice of Coupé, 5-door Sedan or Convertible.

If all this doesn't convince you to get your hands on a 900, our starting price of only \$28,345* most certainly will.

So call 1-800-263-1999 to arrange a test drive. And at every turn, you'll begin to discover your own reasons for owning a Saab 900.

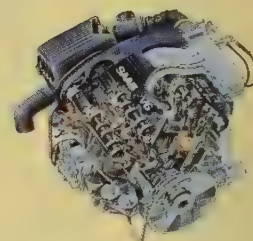


SAAB
9 0 0

*MSRP of Saab 900 S ISA package including freight (\$745). License, insurance and taxes not included. Retailer may sell for less.



Hopefully, you'll never have occasion to use our most important features: energy-absorbing crumple zones, beams and panels.



For enhanced performance, fuel economy and reliability, Saab was one of the first to use 4-valve competition car technology.



All 5 Safeseats receive 3-point safety belts. And our dual integrated Child Booster Cushions are a very comforting option.

WORLD NO-TOBACCO DAY; MAY 31, 1995

A Message from the World Health Organization

"Tobacco costs more than you think"

Today, tobacco use has spread to all parts of the world. The one driving force behind the spread of this epidemic is not a virus, or a gene, or a natural disaster. It is man-made and it is driven by an economic force: the search for profit. This search for profit gives higher priority to the financial well-being of a few corporations than to the lives of hundreds of millions of people. It proposes to enrich a few at a net cost to humanity which, over the years, is measurable in hundreds of billions of dollars and millions of lives.

It is the search for profit which is driving the world's tobacco companies to carve out new markets for themselves in Asia, Africa, South America and Eastern Europe, and to fight back against all efforts to reduce consumption in such places as Western Europe, North America and the South Pacific. Thus, tobacco companies seek to addict new generations of smokers, to increase consumption among existing tobacco users, to lead users of traditional forms of tobacco into switching to manufactured products and to persuade women that they should "liberate" themselves from cultural inhibitions by smoking cigarettes.

However, as we have learned from fighting other health hazards, we can act on the environment so that it no longer promotes a disease but helps to control it. Governments have wide-ranging powers to influence and change the economic environment which stimulates tobacco use. They can choose from among a variety of economic measures to stem and reverse the rise in tobacco use. They can redefine their tobacco taxation policies, enforce changes in the way tobacco products are regulated, and promote economic alternatives to tobacco-farming. They can also decide to earmark part of their tobacco sales and tax revenues for investment in alternative crops which will provide people with new sources of income and food to improve health rather than destroy it.



Worldwide, experience has shown that effective measures are available and can be enforced to reduce tobacco consumption. Economic measures in particular, such as increased taxes on tobacco, have given us some of our most impressive victories in public health campaigns to date. It is time to use the lessons learned from that experience for the benefit of all the nations of the world.

We have the ability, and the opportunity, to bring this epidemic under control. To the extent that we succeed, life expectancy and the quality of life will be improved. Millions of lives and billions of dollars will be saved. At a time when the world needs to tap all its resources for so many worthwhile projects, it is unethical that so much human energy should be directed towards making a profit for a few and misery for so many. By reducing the economic incentives which fuel the epidemic, we may have hope that some of the resources currently used up by the tobacco industry will be redirected to initiatives which will actually benefit mankind. ■

(Reprinted from Tobacco Alert, World No-Tobacco Day 1995, Special Issue, Published by the World Health Organization, and prepared in cooperation with Non-Smokers' Rights Association, Ottawa, Canada.)

JOURNAL

May/
May
1995
Vol. 61
No. 5

War is An Atrocious Thing

P. Ralph Crawford, BA, DMD

Fifty years ago this month, on May 8, 1945, the Second World War came to an end in Europe after almost six years of horrific strife. By then, the conflagration had claimed more than 50 million lives. And few rational men and women, having lived through it, could dispute what Tolstoy said so well in the literary classic *War and Peace*: "War is such a terrible, such an atrocious thing, that no man has the right to assume the responsibility of beginning it."

During the Second World War, 1.1 million Canadian men and women served full time in the three branches of the Canadian Armed Forces. More than 42,000 Canadians paid the supreme sacrifice, giving up their lives for their country and their children. Among the dead were the 33 members of Canada's Dental Corps who died or were killed in active service. In all, a total of 5,287 dental officers and other ranks served in the Canadian Dental Corps, with half of them serving overseas.

Fifty years after the fact, it is difficult to determine whether the Second World War, or any other war that has been fought, was worth the cost it exacted in human suffering and devastation. Or whether there were truly winners and losers. It is equally difficult for those of us who have never lived through a war to fully comprehend or enumerate the gains or losses.

But the harsh reality of war should never be forgotten, nor the sacrifice of the Canadians who fought for their country. Some of the answers to the events and outcomes of the Second World War, and what they mean today, can be found in a letter that arrived at the *Journal* just prior to press time. Written by Dr. Enrico Wensing, a

1991 graduate of the University of Toronto's dental program, and currently practising in Thornhill, Ontario, the letter speaks of the hope that arises from hardship, the success that is built from sacrifice, and the gratitude that is born from adversity.

"I have been very reflective lately. My wife and I have just bought our first home, we have a healthy growing family, and we both have careers we enjoy very much. Needless to say, both of us have worked hard for our good fortune and we are now reaping some of the rewards. In my case, however, I am also very aware that were it not for the efforts of other Canadians, many years ago, I would not be where I am today. Please allow me to explain.

"In our profession of dentistry, it is our privilege to meet people from diverse backgrounds. Since starting a new solo practice three years ago, I have been fortunate to welcome and get to know many new patients. In particular, I have come to know Sol, Peter, and Frank — three airmen who fought in the Second World War. Twenty years before my birth, they helped liberate my native Holland.

"Sol was a bombardier in a Lancaster. He tells me his stories of the war. How they "flattened" the city of Dresden. How it was actually the Canadian ground forces — like the Blackwatch from Montreal — who were the forward troops, before the Americans arrived, that took all the "s - - -" and freed Holland.

"Peter, born an American, tells the most amazing stories. He survived four years as a squadron leader in a Royal Canadian Air Force (RCAF) Spitfire. Twice shot down, he survived a ditch in "the

river" and a crash in a forest. Both times, he was protected by, cared for and shuttled back to England by the Dutch underground, just to get back up in the air again.

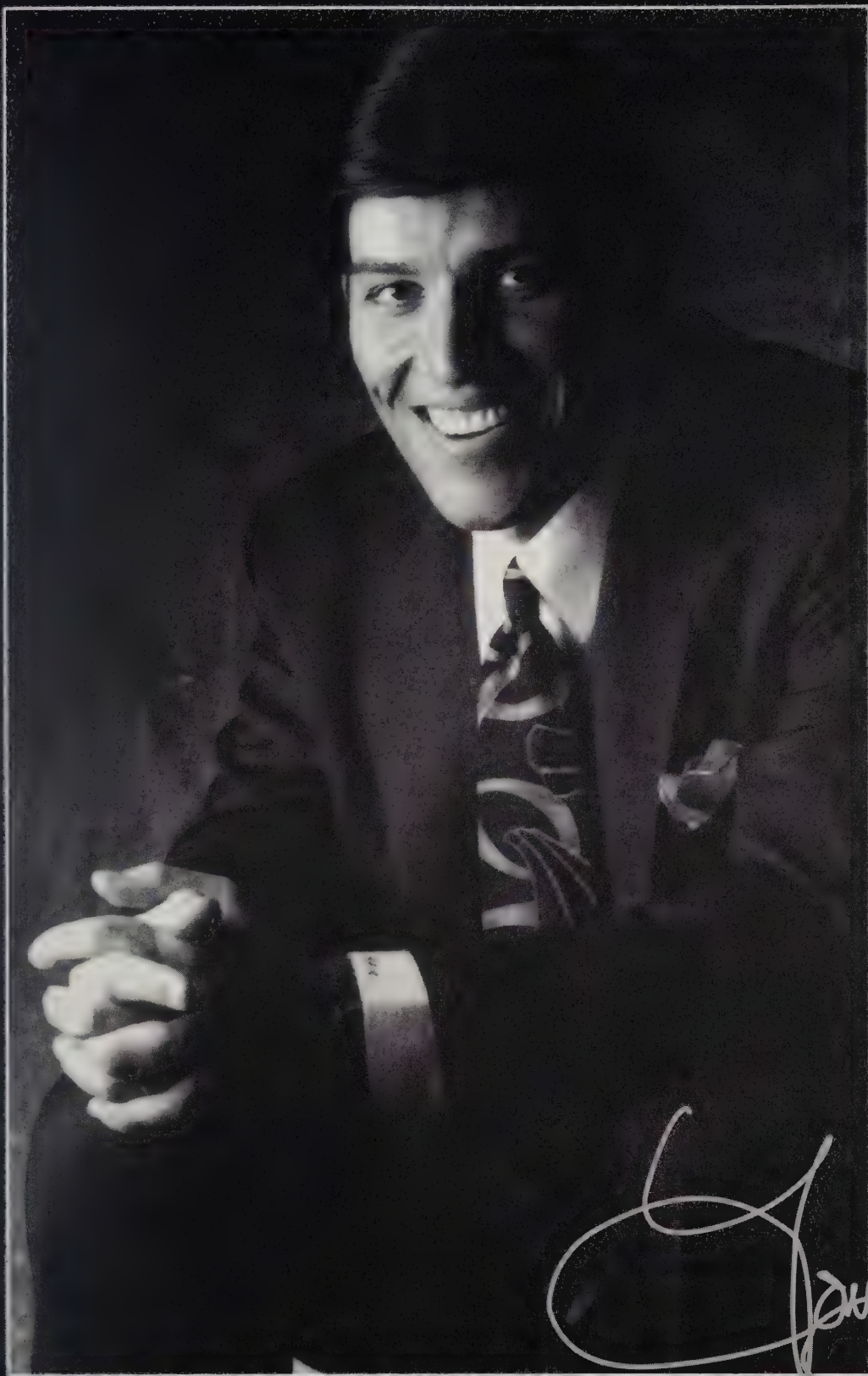
"When I see Frank, we always have loud conversations. Frank tells me he flew in a small wooden plane called a Mosquito. He sat close to the engine for four years and he lost most of his hearing.

"I also remember my grandfather's war stories. In one of them, he recounted how he would paint glue on the fence around the house in the hope of catching birds to feed his starving family. My whole family was lucky and survived the war. My family and I came to Canada when I was a young boy, hoping to enjoy all this country has to offer: freedom, security, and opportunity. I am honored and proud to be a Canadian.

"During the first week of May 1995, about 15,000 Canadian, American, and British Second World War veterans will once again make their way back to Holland. They will go to commemorate the 50th anniversary of the end of the war in Holland, which occurred on May 5. Holland will roll out the red carpet for these veterans. Many events are planned, and most of the veterans will stay with the families they came to know during the war — a reunion of sorts.

"I am told that going back is too emotional for some vets. Others do not have the health to make the journey. Sol will be there. Frank is staying home. Peter just likes to talk about the war years. He gets confused sometimes, mixing up the memories. But I still like to listen. I listen so that I can remember, so that I can someday tell my son. Lest we ever forget." ■

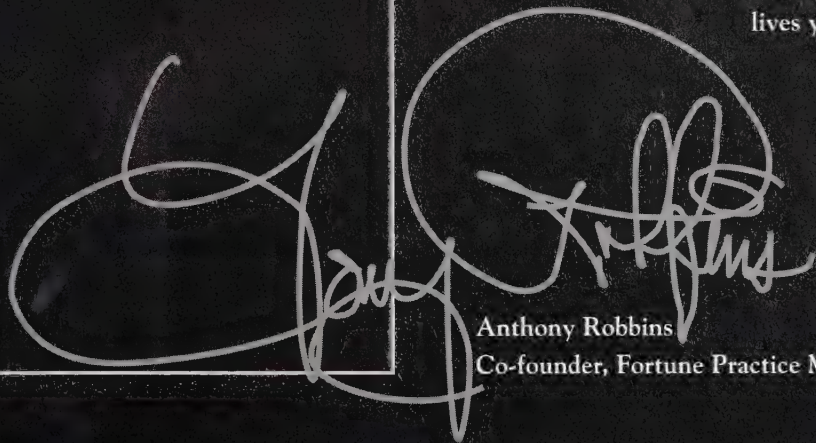
Success leaves clues.



One of the surest ways to succeed in your practice is to model your business strategies and procedures after those of highly successful practitioners. Do what they do, and you'll likely get the same results. Fortune Practice Management has been providing this kind of insight to thousands of practitioners throughout the country using an unparalleled combination of training, management and support systems.

For over 15 years, our network of consultants have developed and consolidated the most effective procedures for everything from scheduling your time productively and increasing your patient base to collecting your accounts receivable. In a short amount of time, our expert coaches will help you maximize your practice in a way that works best for you.

Our programs produce dramatic results by empowering people to take control of their business, their lives, and ultimately their destiny. If you believe, as we do, that your success is too important to postpone, take action right now and call us! Begin putting our powerful techniques to work for both you and the people whose lives you touch!

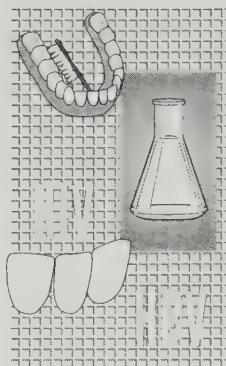


Anthony Robbins
Co-founder, Fortune Practice Management

FORTUNE PRACTICE MANAGEMENT®

1.800.628.1052

FEATURE



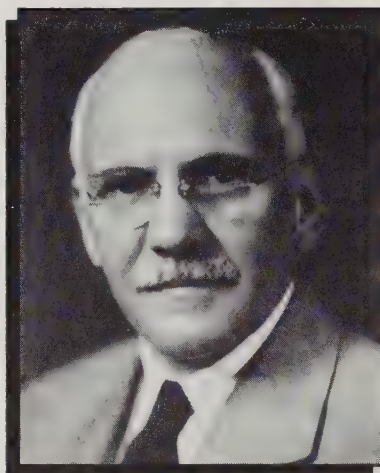
Ash Temple Limited — A Century of Service

P. Ralph Crawford, BA, DMD

In May 1895, Mr. Harry P. Temple of Toronto was invited to New York City by the president of Consolidated Dental Manufacturing Co. to discuss the distribution of dental products in Canada. That New York trip marked the beginning of Ash Temple Ltd, and a century of quality service to the Canadian dental profession.

An intelligent, caring man, Harry Temple had originally hoped to become a physician, but after studying medicine for two years he decided his interest lay elsewhere. Destiny ultimately beckoned him to the world of business and he joined the staff of General Electric Company in Schenectady, New York, for two years. This was followed by a year with the B.C. Electric Company in Vancouver — at a time when a train ride from Toronto to Vancouver took seven days and seven nights.

Shortly after returning to Toronto in 1894, Harry Temple took his first step into the dental world when he purchased the patent rights for an electric dental engine that had been developed in Toronto by a Mr. Shirley Dennison. He immediately set to work to manufacture and sell the engine, with considerable success. In fact, it was this dental engine venture that initiated the May 1895 invitation to New York and led to Mr. Temple becoming the sole agency of The Consolidated Dental Manufacturing Com-

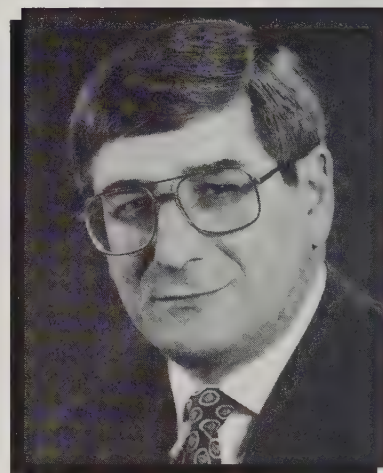


*Harry P. Temple,
founder and first president.*

pany in Canada. It encouraged him to establish his own organization, The H.P. Temple Company.

Over the next 100 years, through a series of internal developments and external acquisitions, the H.P. Temple Co. grew from its humble beginnings at 19 Richmond Street West in Toronto to become Canada's largest dental supply company.

Shortly after establishing his own firm, Harry Temple met George Pattison, an entrepreneur who operated a dental store in Montreal. In 1902 the two men pooled their interests and formed Temple-Pattison Co. Ltd., with a head office in Toronto and a branch office in Montreal. That branch office was to



*Michel Hart,
chairman and chief executive officer.*

be one of many. Harry Temple opened his first Western branch in Winnipeg in 1904.

In 1906 Temple and Pattison acquired the S.B. Chandler Dental Depot of Newcastle, Ontario. This purchase was another benchmark in dental history. Dr. S.B. Chandler had apprenticed in Ogdensburg, New York, and first practised in Port Hope in 1848. Shortly after he moved to Newcastle, Upper Canada, he began making buying trips to New York City — by stage coach to Prescott, ferry across the St. Lawrence to Ogdensburg, and through a series of train rides into New York. Initially, Dr. Chandler made the trips to buy his supplies and equipment for his own prac-



Ash Temple Toronto office, 1913-1972.



Head office, Don Mills, Ontario.

tice, but his dental confreres wasted no time in asking him to buy for them as well. It didn't take Dr. Chandler long to recognize a need, and he opened Canada's very first dental depot in 1859. It is believed that Dr. Chandler's company was the first Canadian firm to hold membership in the American Dental Trade Association.

The same year that they acquired Chandler Depot, Temple and Pattison purchased the dental supply business of Dr. Henry Rae of London, Ontario, adding yet another branch to their growing company. It is reported that Dr. Rae stayed on to supervise the London branch for a salary of \$600 a year.

Western expansion continued for Temple-Pattison with the opening of branches in Calgary and Vancouver in 1908, Edmonton in 1912, and Regina in 1915. The biggest change occurred in 1923, however, when Temple-Pattison merged with the Ontario operations of Claudius Ash and Sons of London, England, to form a new organization, Ash Temple Limited.

Like so many successful companies, Ash and Sons had humble and historic beginnings. Claudius Ash, a silversmith, ventured into the dental supply market in the mid-nineteenth century after becoming very adept at rivetting human teeth to solid ivory denture bases. But he abhorred having to work with the human teeth salvaged from battlefields and graveyards, and soon de-

veloped his own style of fine porcelain teeth. Claudius Ash was also the first to design "tube-teeth" to fit over the pins on bridges and dentures.

The 1923 agreement with Claudius Ash and Sons brought Toronto and Hamilton branches into the new corporate structure, and in that same year a branch office was opened in Ottawa. In 1929, as the economic clouds of the great depression formed around the world, the Claudius Ash firm failed to exercise its option to gain control of Ash Temple Limited. As a result, the company remained truly Canadian, and kept the Ash Temple name.

From the early days, Canada's fastest expanding dental supply house kept outgrowing its premises. By 1910, the original location at 19 Richmond Street West had been abandoned for a new building erected at 12 Queen Street. Two years later, in 1913, still more space was needed, and the company moved into new premises at 243 College Street. It was no coincidence that the new dental school of the Royal College of Dentists of Ontario was just down the street. The College Street location remained Ash Temple's headquarters until 1974, when the company relocated to its current modern facility in Don Mills, Ontario.

Although Ash Temple had pioneered branches throughout the West, from Manitoba to Victoria,

B.C., until 1962 it never aggressively pursued business in the Atlantic provinces. Rather than enter into rigorous competition for customers in an area that was already well served by other suppliers, it had maintained and fostered cordial relations with a family-owned business, the Maritime Dental Supply Co., Ltd., which maintained offices in Halifax, N.S., and St. John, N.B. Ash Temple became a true coast-to-coast company in 1962, when it purchased the Bell family's interest in Maritime Dental. With the acquisition, Ash Temple stretched from the Atlantic to the Pacific. In 1976 the company's 14th branch was opened in Quebec City.

Mr. Harry P. Temple died in 1944, but not before he ingrained his character and integrity on the firm that bears his name. Those who knew Harry Temple and did business with him remember Ash Temple's founder as a man who was scrupulously honest in all his relationships. He expected his staff, suppliers and customers to act in the same fashion, and he had positive beliefs about fair and ethical business practices, especially where price was concerned. And even in a business where competition was always keen, he insisted that the same price be available to every customer — a policy generally accepted by the dental profession.



Temple family members retained interest and the presidency of Ash Temple until the early 1950s, when Mrs. H.P. Temple sold her controlling interest in the company, and a public financing of corporate securities ensued. By 1967, the ownership of Ash Temple was acquired by Stern Metals Limited of Mount Vernon, New York. Soon after, Stern itself was to merge with Cooper Laboratories Inc. of Palo Alto, California, a manufacturer of dental, ophthalmic and pharmaceutical products.

Sixteen years later, in April 1983, a Canadian management group re-acquired Ash Temple. With the purchase, the company was once again 100 per cent Canadian owned and operated. There were more changes to come, however. On July 1, 1983, the Ontario operations of National Refining Company Limited were combined with Ash Temple's. This merger, which included management, sales representatives and key technical and inside support staff, added a

wealth of experience and expertise to the company.

Montreal born and raised Michel Hart, whose career path had seen him spend five years in the Canadian Air Force, before joining Pfizer Canada and then Cooper Laboratories in the United States, assumed the role of chairman and CEO of the re-organized company that today employs more than 400 people — 40 of whom are company shareholders.

Michel Hart and the Ash Temple's shareholders are corporate visionaries — guiding their company beyond the scope of a traditional buy-sell dental supply depot. Since the 1980s, Ash Temple has accepted the challenge of innovation and research by investing in subsidiaries to bring unique products and services to the profession within a global market.

In 1985 the Servident division was formed to serve clients in the Province of Quebec. In 1986 the A-Tech Manufacturing division was formed for the design and manufacture of custom and standard dental cabinets. Microbex Aseptics Inc. was founded in 1987 to develop, manufacture and market a line of dental office asepsis and anti-microbial products. And in 1992 the company became a majority shareholder of ATP Industries to develop and market Prosthoflex, the revolutionary monomer-free denture process.

Canadian dentistry salutes this unique Canadian dental supply company and wishes the 400 employees — who are the heart and soul of Ash Temple — the best of wishes as they take their first steps into their second century of service. ■

DID YOU KNOW?

NOXZEMA



A Maryland pharmacist, Dr. Avery Bunting, hit on a formula after more than ten years of mixing batches of skin cream in his coffee pot. The year was 1914 and his formula was perfect. But he didn't have a name — and he was about to give up.

One day a regular customer walked into the store and said, "Doc, you know your sunburn cream has sure knocked out me eczema." Bunting was inspired — the cream that "knocked out eczema" became known as Noxzema.



LISTERINE

ANTISEPTIC - ANTIPLAQUE
ANTINGIVITIS - MOUTHWASH

INDICATIONS: Helps reduce gingivitis (minor inflammation of the gums caused by plaque above the gumline) when used in a conscientiously applied program of oral hygiene and dental care. Kills the germs that cause bad breath, plaque, gingivitis and sore throats due to colds.

CAUTIONS: Keep out of reach of children. Do not swallow. Not to be used by children under 12 years of age. In case of accidental ingestion, contact a Poison Control Centre or doctor immediately.

DOSEAGE: Rinse full strength with 20 mL for 30 seconds twice a day.

MEDICINAL INGREDIENTS: Eucalyptol 0.091% w/v, Thymol 0.063% w/v, Menthol 0.042% w/v.

NON-MEDICINAL INGREDIENT: Alcohol.

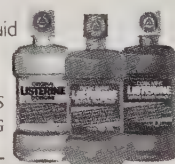
NOTE: Cold temperatures may cloud this product, its efficacy will not be affected.

SUPPLIED:

Original Listerine: Clear, amber liquid available in bottles of 250, 500, 750, and 1,000 mL.

Cool Mint Listerine: Clear, blue, cool mint flavoured liquid available in bottles of 250, 500, 750, and 1,000 mL.

Fresh Burst Listerine: Clear, green, mint flavoured liquid available in bottles of 250, 500, 750, and 1,000 mL.



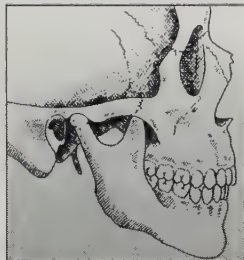
LISTERINE FIGHTS GINGIVITIS
WITHOUT STAINING

WARNER
WELLCOME

*TM Warner-Lambert Company Inc. use Scarborough, Ontario M1L 2N3

(P.A.S.B.)

ORAL AND MAXILLOFACIAL SURGERY



Orthognathic Surgery and the Family Dentist

D.S. Precious, DDS, M.Sc., FRCD(C)

R.H. Goodday, DDS, M.Sc., FRCD(C)

Introduction

Orthognathic surgery is used to correct deformities of the jaws, facial skeleton and associated soft tissues. Many of these deformities result from genetic, developmental, functional and pathological causes. They may also be acquired through traumatic injuries, neoplastic processes, or degenerative diseases such as rheumatoid arthritis.

Deformities of the musculoskeletal elements of the face are three dimensional in nature. They may be unilateral or bilateral, and can occur in either one or both of the jaws. The most common maxillofacial deformities that can be corrected by orthognathic surgery and orthodontic treatment are maxillary or mandibular prognathism, maxillary or mandibular retrognathism, vertical maxillary excess, anterior mandibular excess, or any combination of the above malformations that produces the open-bite type of deformity.

Over the past 20 years, advances in both diagnosis and treatment techniques have improved the accuracy, stability and overall quality of patient care. In our opinion, however, the surgical correction of maxillofacial deformities should be carried out under circumstances that permit the patient, surgeon, orthodontist and family dentist to fully understand the stated treatment objectives.

This paper discusses specific aspects of the correction of maxillofacial deformities that should be of interest to family dentists seeking to better counsel their patients.

Informed Consent

No treatment should be provided without the patient's informed consent. This can only be obtained after the patient has been fully informed of the indications for the proposed treatments or procedures, as well as the goals of the proposed treatment plan, the expected outcome, the known benefits and risks, and the known risks, complications and expected outcome of all other treatment options, including the option of receiving no treatment at all.

Reasons For Care

The principal goal of orthognathic surgery is to establish or restore function of the teeth, jaws and soft tissues. Concomitant with this functional correction, there is often an improvement in facial form (Fig. 1). Generally, before orthognathic surgery is proposed, there must be both physical (Fig. 2) and imaging evidence (Fig. 3) of a musculoskeletal, dento-osseous and/or soft tissue deformity to confirm the existence of functional jaw disorders. There may be malocclusion present with abnormal overbite (Fig. 4) and overjet (Fig. 5), abnormal occlusal plane orientation (Fig. 6), or tooth alignment and position abnormalities (Fig. 7) that cannot be corrected by

either orthodontics or prosthodontics alone.

Some patients experience an inability to adequately open their jaws. In fact, many maxillofacial deformities are linked to attendant temporomandibular joint dysfunctions. Sleep apnoea can accompany severe Class II mandibular deficiency type deformities, and patients with significant vertical maxillary excess tend to be obligate mouth breathers.

Many patients with malocclusions of a skeletal-dental nature have speech difficulties. These are primarily related to problems of articulation (Fig. 8). In addition, certain deformities predispose the patient to periodontal disease such as gingival stripping, recession and bone loss. A malrelationship of the jaws may also result in an abnormal attrition of the dentition.

Important concerns, which are only just beginning to receive the attention of researchers, include psycho-social impairment associated with dentoskeletal deformities and the effects of abnormal biomechanics on jaw loading.

Treatment Goals

In these cases, the treatment goals of the family dentist, orthodontist and maxillofacial surgeon are basically the same. All three strive to achieve a state of normal mastication and swallowing, stable and functional occlusion, normal range of motion of the jaws, acceptable quality of speech, the

JOURNAL

May/
Mai
1995
Vol. 61
No. 5



Nature's Aesthetics...

THE PRA®'S ART OF PRECISION | THE FIRST ORAL PROSTHETIC SYSTEM THAT COMBINES STATE-OF-THE-ART
TECHNOLOGIES TO RECREATE NATURE'S AESTHETICS

**ACHMANN Dental
Laboratories Ltd.**

Cambridge, Ont.
1-800-265-3546

**Laboratoire dentaire
MALO & ASS. Inc.**

Laval, Qc
(514) 661-0600

**SHAW Laboratories
(Edmonton) Ltd.**

Edmonton, Alta
1-800-661-7429

**NIKA laboratoire
dentaire**

Charlesbourg, Qc
(418) 683-1009

**Laboratoire LAFOND,
DESJARDINS & ASS. Inc.**

Laval, Qc
1-800-361-2145

SHAW Laboratories Ltd.

Winnipeg, Man.
1-800-665-7479

The Precision of the
PRA[®] Specialists

**Laboratoire
DENTEC Inc.**

Charlesbourg, Qc
(418) 628-5039

**PROLABO
dentaire Inc.**

Montreal, Qc
(514) 728-5352

**CROSSTOWN Dental
Laboratories Ltd.**

Winnipeg, Man.
1-800-665-5159

**Laboratoire
BONNEVILLE**

Ste-Marie de Beauce, Qc
(418) 387-3226

**Laboratoire dentaire
ALPHA-TEC**

Montreal, Qc
(514) 722-5838

**UNIVERSAL Dental
Laboratories Ltd.**

Edmonton, Alta
1-800-850-0118



LOOK FOR THIS SEAL OF QUALITY

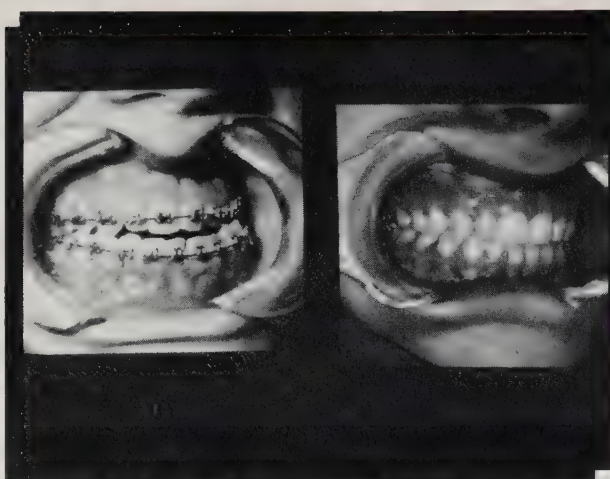


Fig. 1a: Occlusion before and after surgical correction of a Class III dentofacial deformity.



Fig. 1b: Changes in facial form following surgical treatment of this deformity.

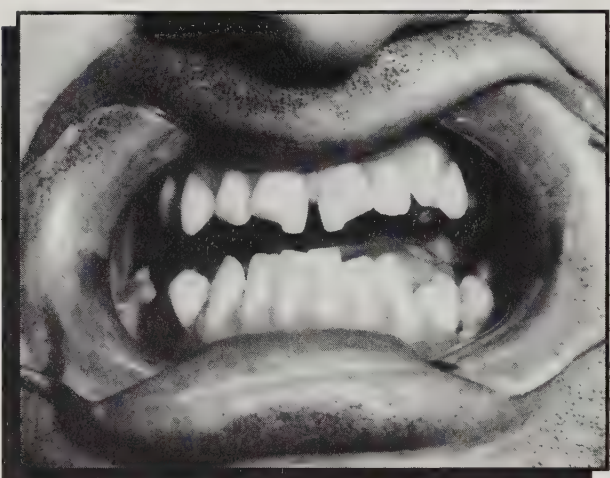


Fig. 2a: Open mouth view demonstrating abnormal wear of incisor teeth in Class III dentofacial deformity patient.

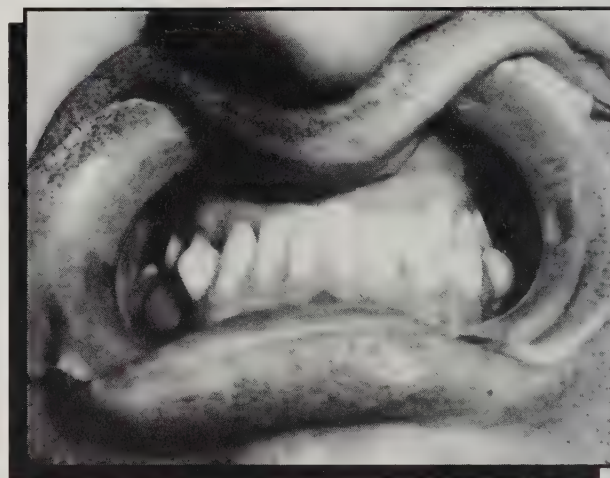


Fig. 2b: Closed mouth view demonstrating significant overclosure and negative overjet reducing the patient's ability to masticate.

establishment or preservation of normal facial balance, sound periodontal health, and to the extent that it is possible, absence of associated temporomandibular joint dysfunction. Overlaid on these objectives is the general goal of improving their patients' psycho-social status.

Risk factors

There are known risk factors associated with orthognathic surgery. Risk factors may be defined as conditions that either increase the potential for complication or decrease the ability or likelihood of obtaining optimum results. For example, in congenital or developmental deformities such as those associated with cleft lip and cleft palate, the risk to the periodontal health of the teeth adjacent the cleft is increased by the presence of an oral-nasal fistula on

the vestibular aspect of the maxilla (**Fig. 9**). Similarly, the presence of unilateral condylar hyperplasia (or hypoplasia) significantly increases the risk of asymmetry, which, in itself, is thought by many clinicians to detract from the predictability of a stable result.

When a maxillofacial deformity is acquired following facial trauma or burns, the resulting compromised blood supply and injured soft tissue elements significantly reduce the likelihood of optimum results (**Fig. 10**). The presence of rheumatoid arthritis also has significant implications with respect to the normal functioning of the temporomandibular joint. If it occurs in a young patient, growth can be inhibited and adversely affected. A similar example is provided by the maxillofacial deformity associated with systemic disease, such as those seen in mus-

cular dystrophy and cerebral palsy (**Fig. 11**).

Leaving aside the general factors that are either congenital or acquired, there are important individual characteristics that also impact on risk. For example, the presence of advanced periodontal disease is a risk factor that affects not only treatment outcome, but also the possibility of using various treatment options. It is well known that the presence of open bite associated with mandibular prognathism and maxillary vertical excess is a risk factor with respect to relapse. All of these factors, and more, must be taken into account and explained clearly to the patient before undertaking a course of treatment. No member of the professional team is in a better position to initiate discussions of this type than the family dentist.

THE BEST BOND JUST GOT BETTER

GREATER STRENGTH

OptiBond resin and glass-filled particles infuse the tubules and reinforce the calcium deficient dentin for micromechanical retention and outstanding adhesion.

BONDS TO FRESH AMALGAM

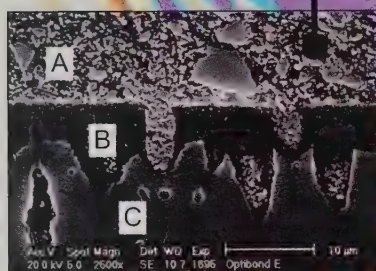
OptiBond is clinically documented to provide both structural lining and adhesion under any amalgam restoration.

NOW ELIMINATES THE NEED FOR CAVITY LINERS

OptiBond is tested for use as an Adhesive/Liner. It replaces calcium hydroxide and glass ionomers to simplify your procedures.

NOW FOR PULP CAPPING

In a recent study, OptiBond was effective in stimulating secondary dentin formation. OptiBond helps to minimize hypersensitivity due to encroaching pulp activity.



SEM magnified 2500x.
A. Optibond Dual Cure
B. Interdiffusion Zone
C. Deep Unaltered Dentin

OptiBond™

STRUCTURAL BONDING

DENTIN BONDING SYSTEM

OPTIBOND IS CLINICALLY PROVEN...a Structural Adhesive/Liner that develops a reinforced link between tooth and restoration for great strength and less post-op sensitivity. MULTI-PURPOSE...bonds to amalgam, enamel, moist dentin, etched dentin, porcelain, metals and composites. Perfect for indirect and direct-placed restorations. OPTIMUM SECURITY...light or chemical cure. Provides fluoride release. Filled technology minimizes polymerization shrinkage. Flows to fill surface irregularities. OPTIMAL ESTHETICS...fills class V margins with a durable layer that finishes to a smooth blended bondline. OPTIMAL HANDLING...easy to place and control for a difference you can feel. For complete information, please contact your Kerr dealer or call: 1-800-KERR-123.

KERR
A SUBSIDIARY OF
SYBRON
DENTAL SPECIALTIES, INC.
The difference is the experience.



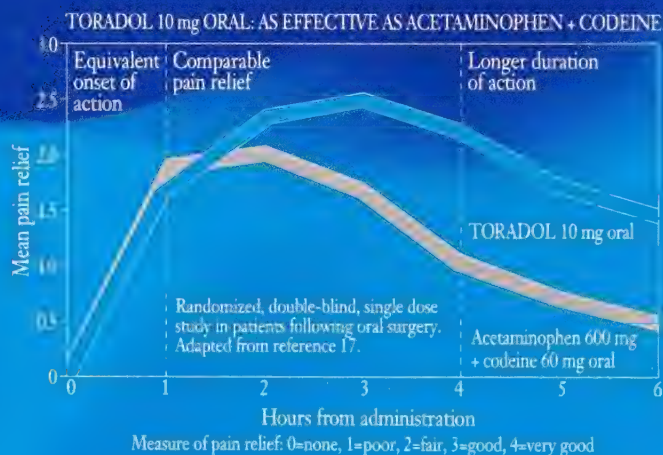
TORADOL

Providing highly effective relief in acute dental pain.



Current strategies in acute pain management suggest a non-narcotic analgesic should be used first, before a narcotic is considered.⁴⁰

Toradol (ketorolac tromethamine) oral has been proven effective in acute post-dental surgical pain such as third molar extraction pain and mandibular pain.^{17,18,62} Toradol may also provide effective relief for your patients suffering from toothache pain and endodontic/periodontic pain.



Unlike narcotics which work at the CNS, Toradol works peripherally, at the site of the pain,^{1,3,58} and therefore has a lower incidence of nausea, dizziness, drowsiness and constipation.^{17,18,21,22} The lower CNS side effects may be of particular benefit to patients who need to drive, operate machinery and remain alert or active.

By class, Toradol belongs to the non-steroidal anti-inflammatory drug (NSAID) family. However, unlike conventional NSAIDs, it is a potent analgesic agent with minimal anti-inflammatory and antipyretic activity. As with all NSAIDs, the most common side effects with Toradol involve the G.I. tract.

With proven efficacy and patient tolerability, Toradol oral is a logical first choice in the short-term management of acute dental pain.

TORADOL
10 mg tablets & 30 mg/mL IM injections KETOROLAC TROMETHAMINE
Effectively treating acute pain

Treatment not to exceed 7 days for musculoskeletal pain. Post-surgical patients not to exceed 5 days.

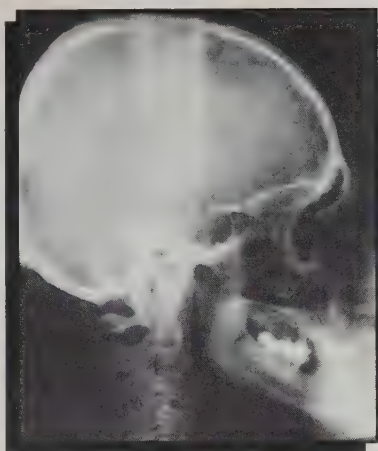


Fig. 3: Lateral cephalometric radiograph demonstrating the bony and soft tissue deformity of the patient in Fig. 2. Note gross overclosure.

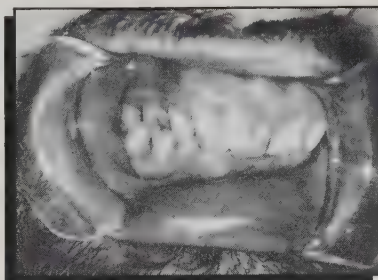


Fig. 4: Abnormal overbite.

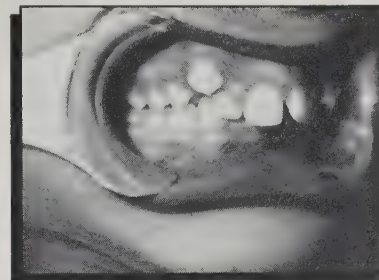


Fig. 5: Abnormal overjet.

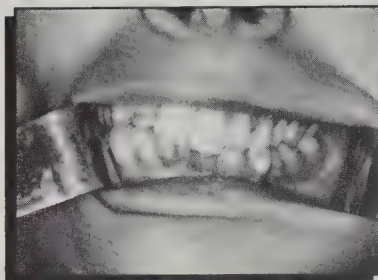


Fig. 6: Abnormal occlusal plane orientation.

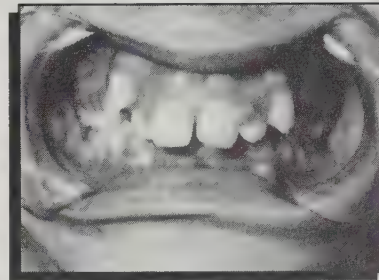


Fig. 7: Abnormal position and alignment of the dentition.

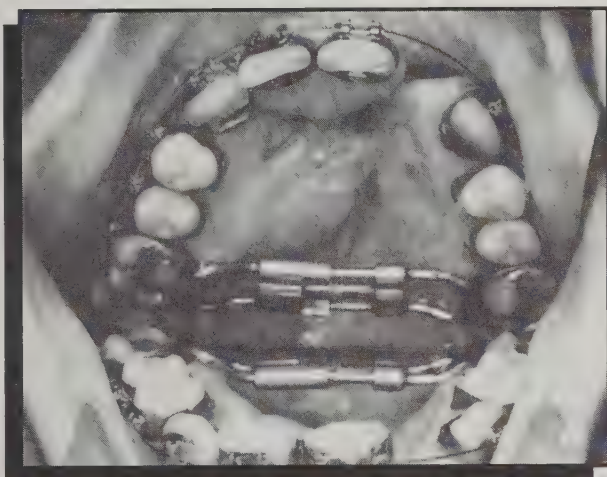


Fig. 8: Palatal and vestibular abnormalities, secondary to clefting, that contribute to speech pathology.

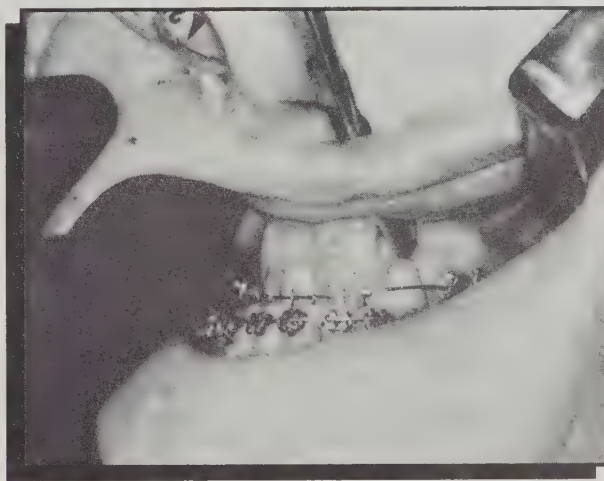


Fig. 9: Communication between the oral and nasal cavities secondary to the cleft lip/alveolus.

Outcomes Of Treatment

Basically, there are two kinds of outcomes following treatment: those that are favorable and those that represent complications.

With respect to complications following orthognathic treatment, it is possible, although rare, for an unstable or inadequate occlusal function to develop. There can also be deterioration in facial appearance, as is the case when inadequate care is taken to reconstruct the nasolabial muscles. And although it occurs infrequently, the new functional relationship established by orthognathic surgery can cause an exacerbation of temporomandibular joint conditions.

Complications can also include transient, and occasionally permanent, alteration in the sensation of the lips, gingiva, and alveolar mucosa, as well as in the skin of the chin, nose and cheeks. There may be unanticipated loss of teeth and, of course, infection is a risk for every surgical procedure. Fortunately, surgery in and about the head and neck is remarkably free from postsurgical infection, which is probably due to the rich vascular supply in this area.

While this rich vascular supply offers protection against infection, it also carries with it an increased risk of postsurgical bleeding problems. Although it is an extremely rare occurrence, following orthog-

nathic surgery there may be bleeding from the vessels in the nasomaxillary region, particularly from either the descending palatine artery or the sphenopalatine artery. This bleeding can be of significant concern and risk to the patient's well-being (Fig. 12).

Prior to their discharge from hospital, patients who have undergone orthognathic surgery are given a pair of wire cutters. In addition, thorough instructions on emergency measures are provided to both the patient and the accompanying persons. These include:

- immediate notification of the attending oral and maxillofacial surgeon,

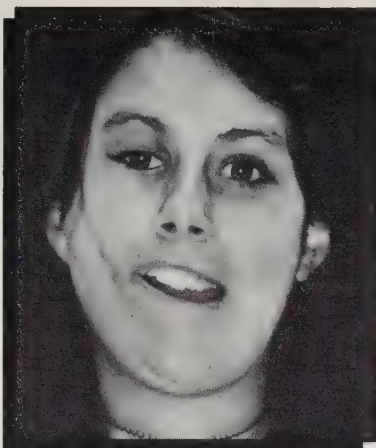


Fig. 10: Residual deformity following injury.

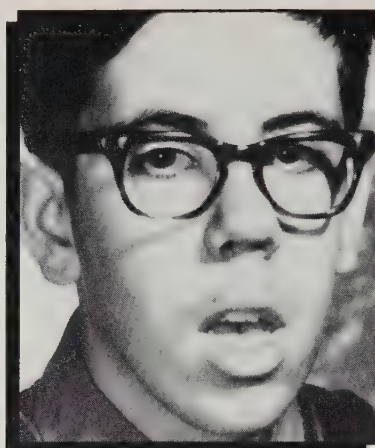


Fig. 11: Lip incompetence and open-bite deformity secondary to muscular dystrophy.

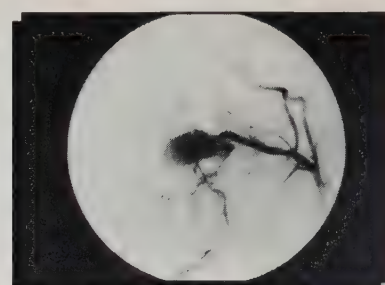


Fig. 12: Pseudoaneurysm associated with the sphenopalatine artery following maxillary surgery.



Fig. 13a: Abnormal articular surface of the condylar head.

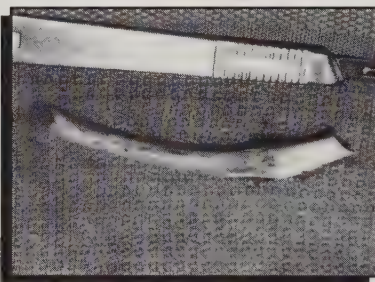


Fig. 13b: Costochondral bone graft before contouring.

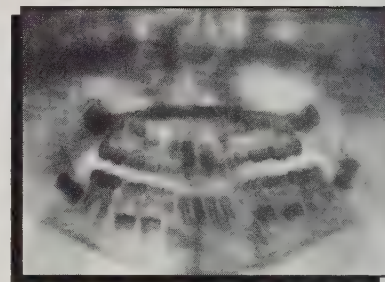


Fig. 13c: Panoramic radiograph demonstrating the reconstruction of the left temporomandibular joint with a costochondral bone graft.

- release of all maxillomandibular fixation (MMF), if appropriate,
- assuming a head forward position (over a waste paper basket) to minimize airway embarrassment,
- rapid transport of patient to the hospital emergency department, either by ambulance or by other means depending on the location and individual circumstances.

When surgery is undertaken in a growing patient, unexpected or abnormal growth may subsequently occur. In adult patients, although the mechanism is somewhat different, a relapse or shifting of the jaws and teeth is possible following orthodontic treatment and orthognathic surgery. As well, either an oral nasal or an oral antral fistula may be created. This would have a detrimental effect on nasal function, sinus function and speech.

Favorable outcomes include long-term stability and improvement of the teeth, jaws and soft tissues, resulting in a functional jaw and occlusal relationship. It is often possible to improve chewing, swallowing and deglutition, in addition to ob-

taining improvement in the speech, breathing and psychosocial well-being of the patient. In most instances, improvement, but not cure, can be expected with respect to pre-existing temporomandibular joint conditions.

Orthognathic surgery frequently allows for the retention of teeth that, in the absence of treatment, would otherwise be lost. In some instances, when orthognathic surgery is of an interceptive nature it may be possible to influence growth and development so that it more closely approximates the norm that would have occurred in the absence of the deformity. Costochondral joint replacement for pediatric patients (**Fig. 13**) with temporomandibular joint ankylosis is an example of this kind of favorable outcome. In some instances, it is possible to either eliminate or diminish parafunctional habits such as bruxism, but the predictability of this favorable outcome is somewhat variable.

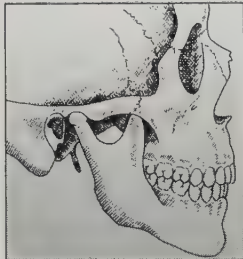
Summary

In general, orthognathic surgery is a reliable, appropriate and pru-

dent treatment option to correct maxillofacial deformities that cannot be managed by nonsurgical means alone. Unfavorable outcomes are relatively rare, but the statistical frequency of these complications loses its meaning in those cases where they occur. If a complication happens to an individual patient, it represents a one-hundred per cent incidence for that individual. For this reason, prior to the provision of treatment it is vitally important to obtain informed consent, ideally by establishing the widest possible information base on which meaningful communication can be built for the patient, the orthodontist, the surgeon, and the family dentist. ■

Dr. D.S. Precious is a professor and chair of the department of oral and maxillofacial surgery, faculty of dentistry, Dalhousie University and Victoria General Hospital, Halifax, N.S.

Dr. R.H. Goodday is an assistant professor, department of oral and maxillofacial surgery, Dalhousie University, Halifax, N.S.



Uncommon Postoperative Temporomandibular Joint Complications

Simon Weinberg, DDS, FRCD(C)

Bohdan Kryshchalskyj, B.Sc., DDS, MRCD(C)

Claudio Tocchio, DDS, MRCD(C)

Kevin McCann, B.Sc., DDS, FRCD(C)

Although the purpose of surgical treatment is clearly intended to improve the patient's condition, in some instances the outcome is detrimental, and often results in adverse effects. This paper reports the circumstances leading to the development of unusual temporomandibular joint (TMJ) complications in three patients, and presents a discussion of the potential pathophysiology in each instance.

Case Report No. 1

A 32-year-old female had a 10-year history of bilateral TMJ pain, mandibular hypomobility and chronic bilateral temporo-occipital headache. Six years prior to her assessment in our practice, the patient had bilateral TMJ Proplast-Teflon interpositional implants (PTIPIs) placed by another surgeon following bilateral meniscectomies.

On two occasions prior to this procedure, the patient had undergone bilateral TMJ surgery. In each instance, this consisted of meniscal repositioning and plication together with arthroplasties of the condylar articular surfaces and articular eminences.

For the first five years following her Proplast-Teflon implant surgery, the patient reported fairly comfortable function with her TMJs, although she did have inter-

mittent episodes of myofascial pain that were well controlled with a non-chewy diet, moist-heat applications and an active range of motion mandibular exercise program.

Approximately one year prior to her referral to our practice, the patient began to develop increasing localized bilateral TMJ pain, together with progressive limitation in her mouth opening ability.

Clinical examination showed that the patient's face was symmetrical. The occlusion was Class II bilaterally. A 3.0 mm anterior open bite was present, with contact only on the first and second molars. The lateral capsular regions were tender to palpation. There was no cervical lymphadenopathy or palpable masses in the TMJ and cervical regions. Interincisal opening was 28 mm without mandibular deviation, and lateral excursions were 2.0 mm to the left and right respectively. Auscultation revealed the presence of a fine crepitation bilaterally through the full range of mouth opening and closing movements.

Panoramic radiography showed a marked degeneration and erosion of the mandibular condyles and glenoid fossae (Fig. 1). CT scan showed perforation of the middle cranial fossa on one side and marked thinning of the fossa roof on the other (Figs. 2 and 3).

Magnetic resonance imaging was not readily available at the time of this examination.

Shortly after the perforation of the middle cranial fossa was confirmed, the patient underwent bilateral TMJ arthrotomies to remove the Proplast-Teflon implants. The moderately distended capsules were incised and reflected to expose the implants, which were enveloped by an excessive amount of granulation tissue (Figs. 4 and 5). The implants were gently lifted from the surgical sites after the three implant fixation screws were identified and removed bilaterally. There was significant erosion of the infero-lateral aspects of both articular eminences. The friable and inflammatory soft tissue was carefully removed with sharp and blunt dissection and gentle curettage. Both condyles were smaller and shorter than normal, and the condylar articular surfaces were markedly eroded and irregular (Fig. 6). Condyloplasties were completed with a rosehead bur and bone rasp. Meticulous curettage along the fossa surface of the right TMJ exposed a circular perforation of the fossa roof medially, which measured approximately 5.0 mm in diameter (Fig. 7). There was no evidence of a cerebrospinal fluid (CSF) leak from the area of perforation. Because the exposed dura was intact and densely fi-

brotic, and because there was no evidence of a CSF leak, the consulting neurosurgeon felt that there was no need to cover the cranial base perforation with an autogenous graft of either soft or hard tissue. There was no evidence of fossa perforation in the left TMJ, although the fossa roof was markedly thinned. After both TMJs were meticulously debrided and the arthroplasties completed, the wounds were closed in standard fashion.

A histologic examination of submitted tissue showed a severe foreign body giant cell reaction (Figs. 8 and 9). The Proplast-Teflon implants showed marked central thinning and wear bilaterally (Fig. 10, 11).

The patient has been followed for 10 months. Maxillary and mandibular osteotomies are planned to correct the malocclusion once the mandibular position has stabilized. The interincisal opening has improved to 31 mm and the intensity and frequency of the TMJ pain has lessened significantly. However, the intermittent myofascial pain continues. A CT scan taken seven months after implant removal was of particular interest, as it showed bony healing of the original cranial fossa perforation (Fig. 12).

Discussion Case No 1.

Introduced in the mid-1970s as a replacement for the severely damaged TMJ disk, Proplast-Teflon interpositional implants became prevalent in the early 1980s.¹⁻⁶ Under unloaded conditions, good biologic tolerance has been shown.⁷⁻⁹ However, an intense foreign body giant cell reaction and subsequent osseous destruction occurs from abraded or sequestered particles of Proplast-Teflon when these implants are placed under load.¹⁰⁻¹² This marked foreign body inflammatory response to Proplast-Teflon implants has been widely reported.^{5,13-20} These reports have also included perforation through the glenoid fossa into the middle cranial cavity.²¹⁻²⁴ A recent report notes that the amount of polymer debris in the soft tissues can be correlated with the degree of implant surface wear, and that

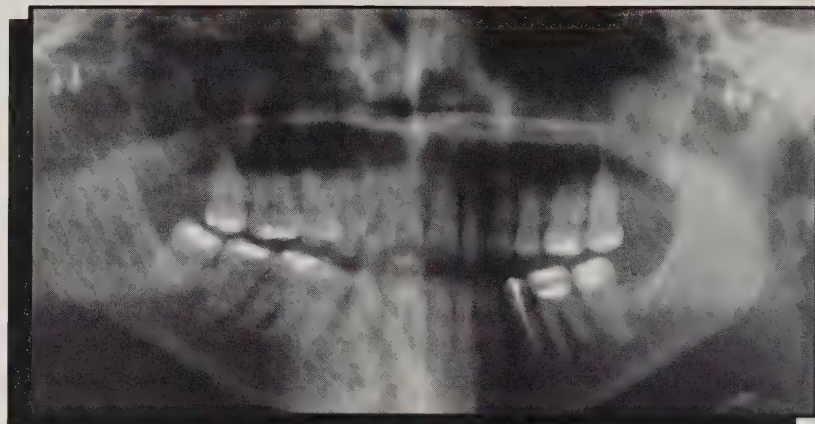
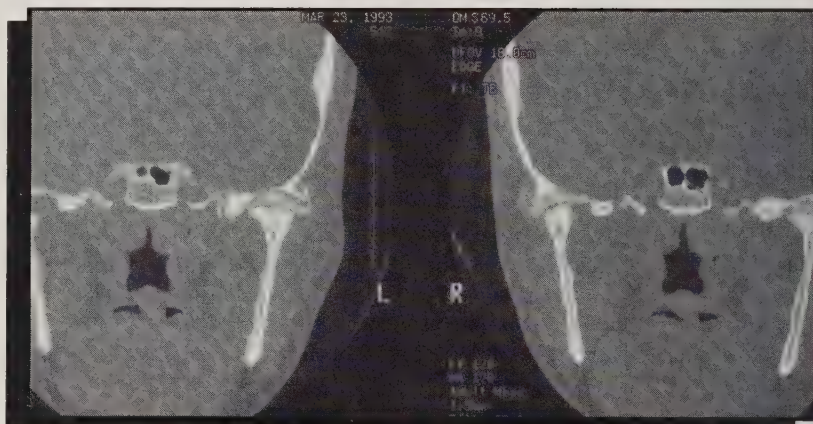
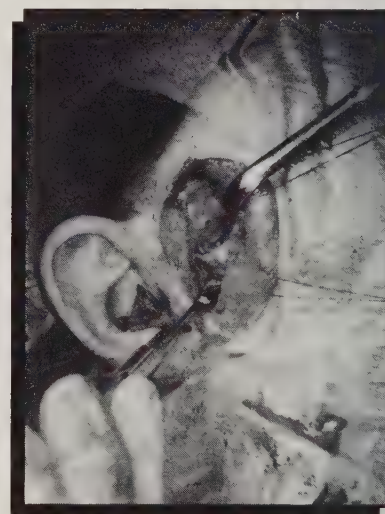
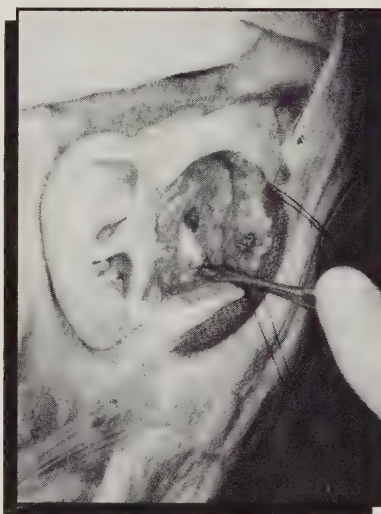


Fig. 1: Panoramic radiograph showing marked degeneration and erosions of the mandibular condyles and glenoid fossae.



Figs. 2 and 3: Coronal CT scans showing perforation of the middle cranial fossa roof in the right TMJ and marked thinning of the fossa roof in the left TMJ.



Figs. 4 and 5: Surgical views showing Proplast-Teflon implants enveloped by granulation tissue.

microfragments of implant material were abundantly present in the surrounding tissues even after a short observation period of 13 months.²⁴

In vitro wear-performance studies of Proplast-Teflon interpositional implants have predicted an

in vivo service life of approximately three years.^{14,24,25}

Because most Proplast-Teflon interpositional implants will continue to degenerate as a result of foreign body giant cell reaction, leading to progressive destruction of the mandibular condyle, fossa,

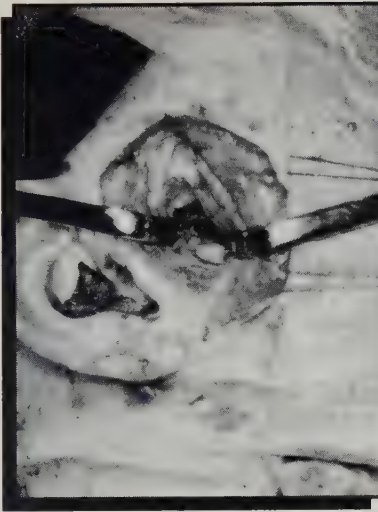


Fig. 6: Surgical view showing eroded and irregular condylar articular surface.

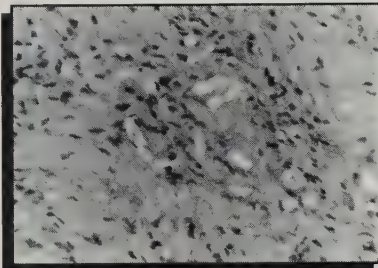


Fig. 8: Haematoxylin and Eosin (H and E) Section X300 magnification. H.P. shows foreign material in spaces surrounded by connective tissue and histiocytes.

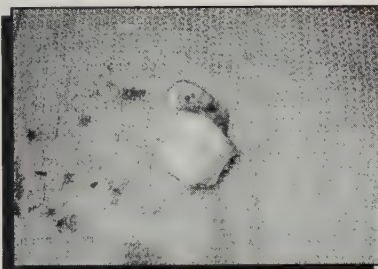


Fig. 10: Shows central thinning and wear of Teflon articular surface of implant.



Fig. 12: Coronal CT scan shows bony healing of original middle cranial fossa perforation in the right TMJ.

eminence and adjacent structures, a recent study suggests that all

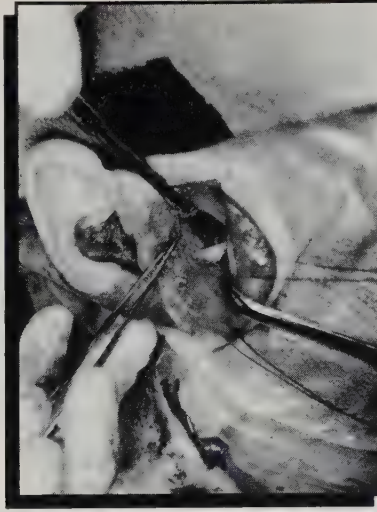


Fig. 7: Proplast-Teflon implant in right TMJ distracted inferiorly exposing circular perforation in roof of glenoid fossa.

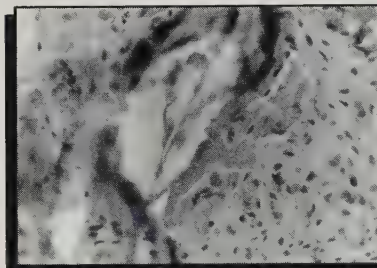


Fig. 9: (H and E) Section X400 magnification. H.P. shows scaly foreign material in retractive space surrounded by collagen, histiocytes and multinucleated foreign body giant cells.

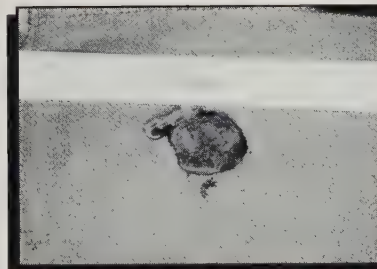


Fig. 11: Shows Proplast undersurface of implant lined with remnants of soft tissue debris.

PTIPI's still in place in human beings should be removed as soon as possible.²³⁻²⁵ However, given the common tendency for PTIPI's to fragment into tiny particles that can migrate well beyond the limits of the joint into regions of the surrounding soft tissues and bone that are difficult to access, complete removal of all implant particles may be impossible. This debris can lead to recurrent foreign body giant cell inflammatory episodes, which produce subsequent destruction of the hard and soft tissues within the TMJ.²³

Patients who have had their PTIPIs removed require regular, long-term (presumably life-long) follow-up by clinical examination, periodic radiographs and MR scans.^{23,25}

Unfortunately, TMJ reconstruction with autologous tissues, following Proplast-Teflon implant failure and removal, has proven to be largely unsuccessful. It appears that the use of a total joint prosthesis may be indicated to achieve somewhat successful reconstruction after Proplast-Teflon implant failure.²⁶

Case Report No. 2

A 23-year-old woman had undergone mandibular advancement surgery seven years earlier. She did not receive orthodontic treatment at that time. Instead, the surgeon corrected her deformity with bilateral extraoral vertical subcondylar osteotomies carried out through a submandibular approach. The mandible was advanced into its predetermined position and fixed with intermaxillary wires applied to maxillary and mandibular archbars. A notch was then cut into the posterior border of the tooth-bearing segments, and the inferior aspects of both proximal segments were tipped forward and wedged tightly into this notch. At the same time, the condyles were rotated and seated heavily in a postero-superior direction. Good bony apposition existed between the proximal and distal mandibular segments at the level of the notch and for approximately one centimetre above this region. The fragments were fixed in this position with horizontal transosseous wires that were placed slightly above the notched areas. A V-shaped non-contacting defect existed above this region. The proximal segments, consisting of the condylar head, neck and posterior ramus, were therefore wedged under pressure between the distal tooth-bearing segments and the articular fossae of the temporal bones. After eight weeks, the intermaxillary fixation and arch bars were removed. The patient experienced an uneventful recovery for another seven months. She then began to develop mild discomfort

in her right TMJ with intermittent limitation of mandibular range of motion. Joint noises were not reported. She was able to carry out her normal daily activities without much difficulty, and was referred for assessment approximately seven years after her mandibular surgery.

Panorex X-rays taken one year, two years and seven years after her mandibular surgery showed severe degeneration of both proximal segments with substantial loss of condylar mass (Figs. 13, 14 and 15). The overjet was 7.0 mm, overbite 2.0 mm and the interincisal opening 35 mm without mandibular deviation. The patient felt that her lower jaw was slipping back to its original position, and she was told that additional reconstructive surgery would be required to correct her condition. Subsequently, the patient informed us that she had decided not to proceed with any further treatment.

Discussion Case No. 2

The differential diagnosis of condylar mass loss included idiopathic condylitis, avascular necrosis and degenerative joint disease.

Idiopathic condylitis has been defined as a significant progressive decrease in condylar head volume resulting in progressive mandibular retrusion and anterior open bite.²⁷ The etiology of condylitis is multifactorial and is probably not related to some of the known causes of condylar resorption such as trauma and neoplasia. Various patterns of TMJ compression have been implicated in the etiology of condylar resorption. Arnett and Tamborello have reported four forms of TMJ compression related to orthognathic surgery.²⁸ These compressive forces may be active either during or after surgery, and can result in progressive condylar mass loss and subsequent mandibular relapse. The four compressive phenomena include joint pressure produced by the surgeon or by the osteotomy hardware, parafunctional loading by the patient or biomechanical factors.²⁸

The postoperative position of the condyle is strongly influenced by the direction and force applied to the condylar seating.²⁸ In this

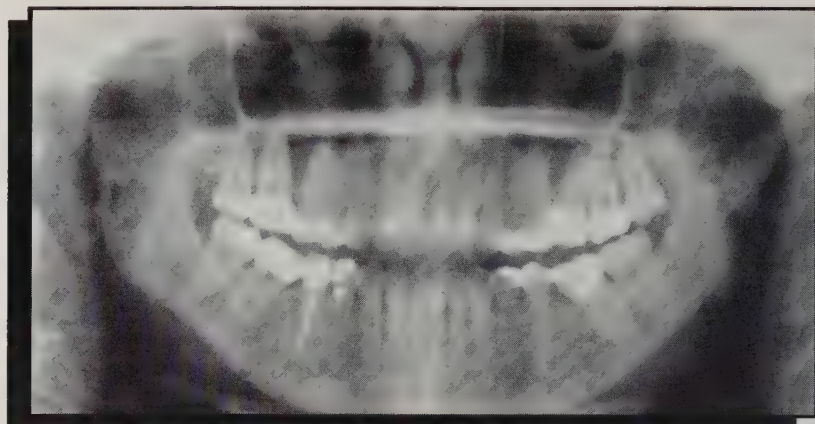


Fig. 13: Panoramic radiograph showing advanced degeneration of both proximal segments and mandibular condyles.

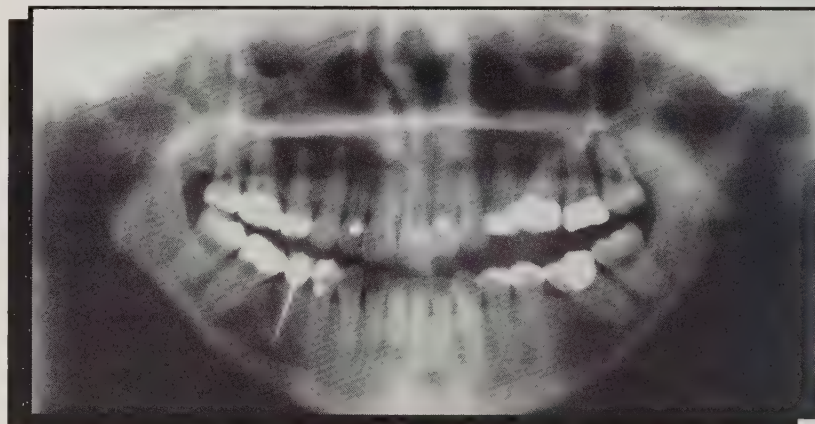


Fig. 14: Panoramic radiograph taken one year after Fig. 13, showing progression of proximal segment degeneration.



Fig. 15: Panoramic radiograph taken six years after Fig. 13, shows almost total destruction of right mandibular condyle with very little progressive destruction of left mandibular proximal segment.

case, the heavy posterosuperior seating of the proximal segments may have resulted in a pathologic position of the condyles, leading to mandibular relapse. As a result of this excessive distalization of the condyles, the disk positions may be forward, as suggested by Nickerson and Boering,²⁹ or the disk may be correctly related to the condyle but excessively compressed.

Intraoperative loading by hardware (transosseous wires, screws) to immobilize the tooth-bearing segment to the condylar segment can drive the condyle posteriorly in the fossa, producing pathologic condylar positions that result in resorption. The disk may be anteriorly displaced in these cases, however, excessive loading of the non-displaced but compressed disk may also lead to condylar re-

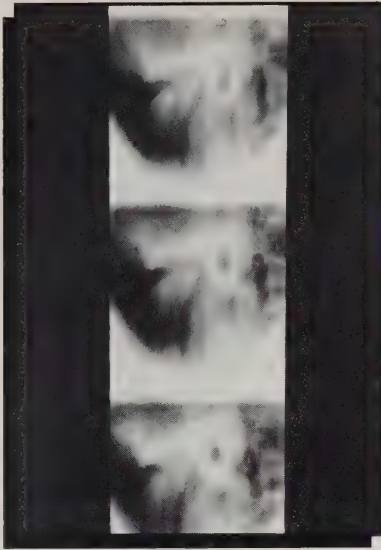


Fig. 16: TMJ tomograms showing flattening, sclerosis and erosions of mandibular condyle and articular eminence in degenerative joint disease.

sorption. In addition, the horizontal transosseous fixation wires that were placed in this case may have been partially responsible for the initiation and maintenance of posterior condylar positions.

Hyperactive muscle loading usually occurs early, during intermaxillary fixation, if present, and prior to osteotomy healing. It is directly related to jaw closing muscle hyperactivity (clenching). The condyle is overseated in the fossa relative to the maximum interdigitated position of the teeth prior to healing of the osteotomy. When the osteotomy has consolidated, the disk and condyle undergo remodelling or resorption. Relapse can occur late as a result of this loading. This joint change can occur with a properly-positioned condyle and disk, but is potentially severe in the distally deflected condyle with an anteriorly displaced disk.

Malpositioned loading occurs when a condyle that is displaced in an unphysiologic position relative to the disk and fossa is loaded through normal muscular activity. This loading may lead to disk compression and/or loss of condylar height, resulting in a shortened distance between the glenoid fossa and the incisor teeth, and terminating in mandibular relapse.³⁰

The excessive bilateral loss of condylar mass evident in this patient may also represent an exam-



Fig. 17: Panoramic radiograph showing bony ankylosis of the left TMJ.

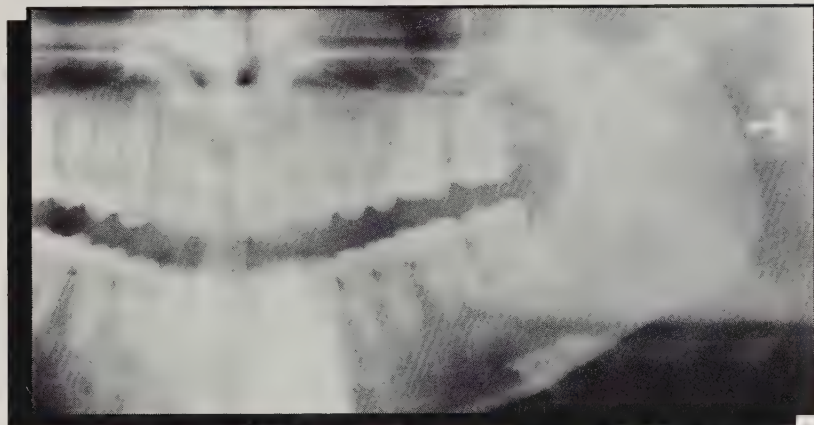


Fig. 18: Panoramic radiograph showing gap arthroplasty of left TMJ and two screws to secure silastic implant to glenoid fossa.

ple of female idiopathic condylar resorption (condylitis), as described by Arnett and Tamborello.³⁰ These authors suggest that the large number of estrogen receptors in the TMJ complex of female baboons, and the absence of similar receptors in male baboons, is evidence that there is a physiologic distinction between male and female TMJs that may lead to a difference in the sequelae of joint loading.^{31,32} They hypothesized that a small portion of the female population is susceptible to condylar resorption secondary to an increased joint load that would typically be well-tolerated by the general female population.

Avascular or aseptic necrosis as a result of proximal segment compression may also be a reasonable diagnosis in this case. The pathophysiology of avascular necrosis appears to be related to increased marrow pressure or intraosseous hypertension.³³ It is conceivable that the fixation of the condylar segments under compression in a

posterosuperior direction between the articular fossae and the tooth-bearing segments of the mandible resulted in compression and compromise of the arterial blood supply to the condyle, leading to decreased perfusion and condylar ischemia. As an additional or alternative explanation, the repetitive impact loading of this compressed condyle could have resulted in the development of osteoarthritis and subsequent failure of the articular cartilage, with erosion of the subchondral compact bone and exposure of the underlying cancellous marrow. Synovial fluid entering the marrow spaces stimulates an inflammatory response with the accumulation of marrow oedema and fibrosis. This results in intraosseous hypertension and the compression of intraosseous arterial blood vessels, leading to marrow ischemia and necrosis.³³⁻³⁷ When sufficient subcortical supporting structure has been destroyed, the articular surface collapses or implodes, condylar mass

is lost, and condylar height is diminished, decreasing the posterior vertical dimension. This results in mandibular retrusion, anterior open bite and malocclusion.

Avascular necrosis may also be associated with anterior disc displacement. It is theorized that the anteriorly displaced disc occludes the primary blood supply to the condyle, resulting in avascular necrosis, condylar volume loss and progressive mandibular retrusion. It is also plausible, in this case, that the heavy posterior-superior compression of the proximal segments may have resulted in relative anterior disc displacement, with subsequent discal compression of the arterial blood supply to the condyles. However, this process has not been scientifically validated.²⁷ Indeed, the blood supply to the mandibular condyle has been described as a very rich plexus fed by many vessels of assorted sizes rather than by isolated perforating vessels.³⁸ Collateral sources, specifically the posterior aspect of the condylar head, which has a very liberal blood supply, would still continue to maintain adequate blood flow to the condyle even if disc displacement were capable of occluding the anterior arterial supply to the condyle.²⁷

Case Report No. 3

A 33-year-old male patient underwent a left temporomandibular joint (TMJ) meniscectomy for the treatment of advanced degenerative joint disease (**Fig. 16**).

Although the TMJ pain lessened and mandibular mobility improved in the first two postoperative months, the patient's condition steadily worsened. Nine months after surgery, the patient's interincisal opening was only 12 mm and the TMJ pain had returned to its preoperative levels.

Panoramic radiography of the TMJ (**Fig. 17**) showed bony ankylosis of the left TMJ. A dense hard tissue mass had completely obliterated the joint space, resulting in fusion of the condyle and temporal bone.

The patient was taken to surgery, and the ankylosis was treated by gap arthroplasty and the insertion of an interpositional silastic

implant (**Fig. 18**). Twenty-two months after surgery, the patient has moderately-comfortable TMJ function and maintains both an interincisal opening of 32 mm and an acceptable range of mandibular motion.

Discussion Case No. 3

Mandibular hypomobility is a well-known complication following TMJ surgery.³⁹⁻⁴⁰ This disabling condition is caused by the formation of fibrous adhesions in the upper and lower joint spaces that progressively limit the extent of condylar translation and rotation, leading to fibrous ankylosis. In some cases, the fibrous tissue is gradually replaced by bone, leading to the development of bony ankylosis. The presence of an intact meniscus can prevent the direct extension of a hematoma between the condyle and temporal bone, and can act as a barrier to maintain the integrity and separation of the upper and lower joint spaces. However, if the meniscus is removed or severely perforated, bleeding into the joint space can lead to hematoma formation, with subsequent organization and calcification or ossification of the hematoma within a large single joint space. This permits hard tissue fusion between the condyle and the temporal bone. The condition may be significantly enhanced if bleeding occurs from the opposing bony surfaces as a result of articular surface surgery (e.g. condyloplasty, eminoplasty).³⁹ However, the initiation and maintenance of joint mobility through the early application of regular and vigorous, active and passive postoperative jaw exercises, especially condylar translation, is the single most important factor in the prevention of TMJ ankylosis.^{41,42} A joint in which significant bleeding has occurred, and in which motion is lacking or inadequate, establishes a favorable environment that is highly conducive to osteogenesis and the subsequent development of bony ankylosis.^{41,42}

As the essence of postoperative management, the cardinal role of effective mandibular movement in the prevention of limiting fibrosis cannot be overemphasized. ■

Dr. Simon Weinberg is a professor of oral and maxillofacial surgery, faculty of dentistry, University of Toronto.

Dr. Bohdan Kryshchalskyj is chief, division of oral and maxillofacial surgery, Queensway General Hospital, Etobicoke, Ontario.

Dr. Claudio Tocchio is in private practice, specializing in oral and maxillofacial surgery, in North York, Ontario.

Dr. Kevin McCann is a former resident in oral and maxillofacial surgery in the faculty of dentistry, University of Toronto. He is currently in private practice in Stratford, Ontario.

Reprint requests to: Dr. Simon Weinberg, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto, ON M5G 1G6.

References

1. Cook, H.P. Teflon Implantation in Temporomandibular Arthroplasty. *Oral Surg* 33:706-16, 1992.
2. Kent, J.N., Homsy, C.A., Gross, B.D. et al. Pilot Studies of the Porous Implant in Dentistry and Oral Surgery. *J Oral Surg* 30:608-15, 1972.
3. Kent, J.N., Dusek, J. and Smith P. Proplast-Teflon Implants for the Treatment of TMJ Degenerative Disease (Abstract) 60th Annual Meeting AAOMS, Washington, D.C., 1978.
4. Gallagher, D.M. and Wolford, L.M. Comparison of Silastic and Proplast Implants for the TMJ after Condylectomy for Osteoarthritis. *J Oral Maxillofacial Surg* 40:627-30, 1982.
5. Keirsch, T.A. The Use of Proplast-Teflon Implants for Meniscectomy and Disk Repair in the TMJ (Abstract) Clinical Congress on Reconstruction with Biomaterials AAOMS, San Diego, California, 1984.
6. Malloy, R. and Kent, J.N. Retrospective Study of Proplast-Teflon Implants for TMJ Arthritis (Abstract) 63rd Annual Meeting AAOMS, Washington, D.C., 1981.
7. Calnan, J. The Use of Inert Plastic Material in Reconstructive Surgery. *Br J Plast Surg* 16:1, 1963.
8. Friedenberg, Z.B. Bone Growth into Teflon Sponge. *Surg Gynecol Obstet* 116:588, 1963.
9. Homsy, C.A. Biocompatibility of Perfluorinated Polymers and Composites of the Polymers. In: Williams, D.F. ed: *Biocompatibility of Clinical Implant Materials*, Vol. II, Boca Raton, FL. CRC Press, 1981.
10. Charnley, J. Tissue Reactions to Polytetrafluoroethylene *Lancet* 2:1379, 1963.

11. Leidholt, J. and Gorman, H.A. Teflon Hip Prostheses in Dogs. *J Bone Joint Surg* 47:14, 1965.
12. Willert, H.G. Tissue Reactions Around Joint Implants and Bone Cement In: Ghapchal, G., ed. *Arthroplasty of the Hip*, Stuttgart: Thieme Ch. 11, 1973.
13. Florine, B.L., Gatto, D. and Wade, M.L. Pre- and Post-Surgical Tomographic Analysis of TMJ Arthroplasties (Abstract) 68th Annual Meeting AAOMS, New Orleans, La., 1986.
14. Fontenot, M.G. and Kent, J.N. In Vitro Wear Performance of Proplast Disk Implants. *J Oral Maxillofacial Surg* 50:133-9, 1992.
15. McBride, K.L. Clinical Behavior of Synthetic Meniscus Substitutes (Abstract) 68th Annual Meeting AAOMS New Orleans, La., 1986.
16. Mosby, E.L., Zulian, M.A. and Albright, S. TMJ Implant Failure (Abstract) 68th Annual Meeting AAOMS New Orleans, La., 1986.
17. Primley, D.M. *Histologic and Radiographic Evaluation of the Proplast-Teflon Interpositional Implant in TMJ Reconstruction Following Meniscectomy*. Master's Thesis, University of Iowa, 1987.
18. Turlington, E.G. and Welch, S.R. Foreign Body Reactions to Teflon Proplast Fossa Implants in TMJ Arthroplasty (Abstract) 68th Annual Meeting AAOMS, New Orleans, La., 1986.
19. Valentine, J.D., Bernhard E.F., Nat, R. et al. Light and Electron Microscopic Evaluation of Proplast II TMJ Disk Implants. *J Oral Maxillofacial Surg* 47:689:695, 1989.
20. Wade, M.L., Gatto, D. and Florine, B.L. Assessment of Proplast Implants and Meniscoplasties as TMJ Surgical Procedures (Abstract) 68th Annual Meeting AAOMS, New Orleans, La., 1986.
21. Berarducci, J.P., Thompson, D.A. and Scheffer, R.B. Perforation into Middle Cranial Fossa as a Sequel to Use of a Proplast-Teflon Implant for TMJ Reconstruction. *J Oral Maxillofacial Surg* 48:496-98, 1990.
22. Chuong, R. and Piper, M.A. Cerebrospinal Fluid Leak Associated with Proplast Implant Removal from the TMJ. *Oral Surg Oral Med Oral Pathol* 74:422-5, 1992.
23. Chuong, R., Piper, M.A. and Bolland, T.J. Recurrent Giant Cell Reaction to Residual Proplast in the TMJ. *Oral Surg Oral Med Oral Pathol* 76:16-19, 1993.
24. Trumpy, I.G. and Lyberg, T. In Vivo Deterioration of Proplast-Teflon TMJ Interpositional Implants. A Scanning Electron Microscopic and Energy-Dispersive X-Ray Analysis. *J Oral Maxillofacial Surg* 51:624-9, 1993.
25. Feinerman, D.M. and Piecuch, J.F. Long-Term Retrospective Analysis of Twenty-three Proplast-Teflon TMJ Interpositional Implants. *Int J Oral Maxillofacial Surg* 22:11-16, 1993.
26. Henry, C.H. and Wolford, L.M. Treatment Outcomes for TMJ Reconstruction After Proplast-Teflon Implant Failure. *J Oral Maxillofacial Surg* 51:352-8, 1993.
27. Arnett, G.W. Idiopathic Condylitis. In: *Proceedings of the American Association of Oral and Maxillofacial Surgeons, Clinical Congress, Reconstruction of the Facial Skeleton*, Dallas, Texas, 1994.
28. Arnett, G.W. and Tamborello, J.A. *Temporomandibular Joint Ramifications of Orthognathic Surgery. Modern Practise in Orthognathic and Reconstructive Surgery*. Bell, W.H. (ed.) W.B. Saunders Co., 1992.
29. Nickerson, J.W., Jr. and Boering, G. Natural Course of Osteoarthritis as it Relates to Internal Derangement of the TMJ. *Oral and Maxillofacial Surg Clinics North America* 1:27-45, 1989.
30. Arnett, G.W. and Tamborello, J.A. Progressive Class II Development. Female Idiopathic Condylar Resorption. *Oral and Maxillofacial Surg Clinics* 2(4): 699-716, 1990.
31. Aufdemorte, T.B. et al. Estrogen Receptors in the TMJ of the Baboon (*Papio Cynocephalus*). An Autoradiographic Study. *Oral Surg Oral Med Oral Pathol* 61:307-314, 1986.
32. Milam, S.B. et al. Sexual Dimorphism in the Distribution of Estrogen Receptors in the TMJ Complex of the Baboon. *Oral Surg Oral Med Oral Pathol* 64:527-532, 1987.
33. Hungerford, D.S. Response: The Role of Core Decompression in the Treatment of Ischemic Necrosis of the Femoral Head. *Arthritis Rheum* 32(6), 1989.
34. Stegenga, B. TMJ Osteoarthritis and Internal Derangement. Diagnostic and Therapeutic Outcome Assessment. Thesis: Rijksuniversiteit Groningen. Drukkerij Van Denderen B.V., 12-20, 1991.
35. Chuong, R. and Piper, M.A. Avascular Necrosis of the Mandibular Condyle. Pathogenesis and Concepts of Management. *Oral Surg Oral Med Oral Pathol* 75:428-432, 1993.
36. Wilkes, C.H. and Visscher, M.B. Some Physiological Aspects of Bone Marrow Pressure. *J Bone Joint Surg* 57:A49-57, 1975.
37. Ficat, R.P. and Arlet, J. *Ischemia and Necrosis of Bone*. Baltimore, Waverly Press, 1980.
38. Boyer, C.C., Williams T.W. and Stevens F.W. Blood Supply of the Temporomandibular Joint. *J Dent Res* 43(2):224-228, 1964.
39. Keith, D.A. *Surgery of the TMJ*. Blackwell Scientific Publications, 1992.
40. Assael, L.A. Arthrotomy for Internal Derangements in: Kaplan, A.S., and Assael, L.A. *Temporomandibular Disorders, Diagnosis and Treatment*. W.B. Saunders Co. pp. 663-679, 1991.
41. Poremba, E.P. and Moffett, B.C. The Effects of Continuous Passive Motion on the Temporomandibular Joint after Surgery. *Oral Surg Oral Med Oral Pathol* 67:490-498, 1989.
42. Akeson, W.H. et al. *Immobilization Effects of Synovial Joints: The Pathomechanics of Joint Contracture*. *Biorheology* 17:95-110, 1980.

PARTNERSHIP WALK '95

SUNDAY, MAY 28, 11 a.m.

**"Take a step that will be felt
on the other side of the world."**

Join thousands of Canadians in 11 cities across Canada and take a step toward lasting improvement in the quality of life for thousands of people. All funds raised through the Partnership Walk go directly to support health, education, environmental, rural development and income generation projects in Africa and Asia.

For a Walker's sponsorship booklet or more information, call: 1-800-267-2532.

1995 participating cities are:
Victoria, Vancouver, Edmonton, Calgary,
Winnipeg, London, Kitchener, Toronto,
Ottawa, Montreal, Halifax.



We've been going to the

a

Joseph Shaw
Service Technician
Victoria, B.C.

Chantal Dufresne
Customer Service Representative
Montreal, Quebec

e dentist for 100 years, nd we never felt better!

What does it take to serve the Canadian dental profession successfully for 100 years? It takes people – skilled, committed, responsible people, in every corner of the country. It takes the finest in technology and materials – in touch with latest developments, worldwide. And, as the needs of the dental profession evolve, we will always be there – helping to keep you a step ahead.

**Ash
Temple**
LIMITED
Anniversary
100

Rick Baxter
Sales Representative
Toronto, Ontario

The Ash Temple Companies: Ash Temple Limited, Servident,
A-Tech, Microbex Aseptics, ATP Industries
Cabinets by A-Tech

CLINICAL



Effects Of Home Bleaching On the Tissues Of the Oral Cavity

John Sterrett, DDS, Cert. Perio.

Richard B. Price, BDS, MS, DDS, MRCD(C)

Theresa Bankey, B.Sc., DDS, Cert. Perio.

ABSTRACT

Eight subjects used a 10 per cent carbamide peroxide (Opalescence) home bleaching system in a mouthguard for 14 nights. Their periodontal health was assessed by measuring gingival crevicular fluid flow with a Periotron 6000, and subjects were given a questionnaire to assess the effects of the bleaching system. There was no significant change in the gingival crevicular fluid flow, recession, bleeding index or plaque index of any patient during the treatment phase. All treated teeth were lightened, and mild transient tooth sensitivity was common to all participants. One subject experienced internal tooth discoloration, possibly due to marginal leakage around an amalgam restoration.

SOMMAIRE

Pour un traitement à domicile effectué durant 14 nuits, huit sujets ont utilisé dans un protège-bouche un agent de blanchiment comprenant 10 pour cent de peroxyde de carbamide (Opalescence). On a évalué leur santé périodontale en mesurant à l'aide d'un Periotron 6000 l'écoulement de leur fluide gingival et on leur a demandé de remplir un questionnaire touchant l'efficacité du produit. Pendant le traitement, on n'a relevé chez tous les patients aucun changement im-

portant dans l'écoulement du fluide gingival, l'indice d'hémorragie du sillon gingival ou l'indice de la plaque. Toutes les dents traitées ont pris une couleur plus claire, et tous les patients ont éprouvé passagèrement une légère sensibilité aux dents. Chez l'un d'entre eux, on a noté une décoloration dentaire interne, due sans doute au défaut d'étanchéité autour d'une restauration à l'amalgame.

Introduction

The demand for "esthetic dentistry" has increased in the past few years, bringing with it a renewed public interest in the use of home bleaching products to whiten teeth and enhance esthetics. In 1991, the Nova Scotia Dental Association reported the results of a public survey on patient demands.¹ Under the heading Perceived Need, 28 per cent of respondents indicated that they would like to have their teeth whitened to improve their appearance. The concept of whitening natural teeth by bleaching is not new. In 1937, Ames² published several case reports on a successful in-office bleaching technique for treating mottled enamel. This technique relied on the use of 30 per cent hydrogen peroxide and an external heat source to produce the desired effect. In 1989, Goldstein

et al³ reviewed conventional in-office bleaching techniques and concluded that teeth could be safely and effectively bleached using 35 per cent hydrogen peroxide and heat. Nevertheless, there are still concerns about the potential side effects of this technique, including oral carcinoma,⁴ damage to the pulp,^{5,6} alterations in the enamel surface,^{7,8} and root resorption.⁹

Various peroxide solutions have been used as oral antiseptics for many years. However, they have only recently been advocated for use with nightguard home bleaching systems under professional supervision. In 1989, Haywood & Heymann¹⁰ introduced a home bleaching technique as a conservative alternative to the conventional in-office vital bleaching procedure. Under the supervision of a dentist, patients used a 10 per cent carbamide peroxide solution in a nightguard to lighten their teeth. The results indicated that this technique had a great deal of potential.

Most of home bleaching products available today contain either carbamide peroxide or hydrogen peroxide as the active ingredient. Many also include glycerin, varying amounts of carbopol, and trace amounts of fluoride and flavorings.¹¹ Although preliminary results indicate that the use of home bleaching systems generally produces lighter teeth,¹¹⁻¹⁴ little is

known about the short-term effects of bleaching agents on the tissues of the oral cavity or its impact on the stomatognathic system. The purpose of this study, therefore, was to determine if a commercially available home bleaching product containing 10 per cent carbamide peroxide had any effect on the periodontium or on the enamel surface during and immediately after 14 nights of home bleaching. This study also recorded each patient's subjective evaluation of this technique on the stomatognathic system.

Methods and Methods

The protocol for this study was reviewed and approved by the ethics committee of the faculty of dentistry, Dalhousie University, Halifax, Nova Scotia. Informed consent was obtained from nine subjects who wanted their teeth lightened. At the start of the study, an examination was performed to assess the oral soft tissues and the temporomandibular joint and related muscles for any abnormalities. As well, an assessment was made of the periodontal status of the facial surfaces of the teeth to be treated (numbers 14 to 24). Parameters included:

1. Gingival crevicular fluid flow (GCFF; Periotron 6000, Pro Flow, Inc., Amityville, New York)
2. Probing depth (PD; in millimetres)
3. Recession (RC; in millimetres)
4. Bleeding index (BI; present or absent)
5. Plaque index (PI; present or absent)

In addition, a pre- and posttreatment questionnaire was given to each patient to see if they experienced any problems with:

- 1) Tooth sensitivity to hot, cold or acidic foods
- 2) Oral ulceration
- 3) Sore throat
- 4) Altered taste
- 5) Stomach problems (gastrointestinal disorders)
- 6) Bleeding gums

- 7) Headaches or temporomandibular joint pain (craniomandibular dysfunction).

Impressions of the maxillary arch were taken using an irreversible hydrocolloid and a plaster model was made. The facial surfaces of teeth 14 to 24 were painted with L C Block-out Resin (Ultradent Products Inc., Salt Lake City, Utah). Material was applied until the stone model underneath was no longer visible through the resin material (**Fig. 1**). This layer ultimately formed a reservoir in the final nightguard about the facial surfaces of the treated teeth. Using the model, a 0.035-inch nightguard was fabricated from Ultradent Sof-Tray material, according to the manufacturer's instructions, which covered all tooth services. The final appliance was trimmed to finish approximately 0.3 mm short of the gingival margin (**Fig. 2**).

At the initial appointment, a two-week hygiene phase was initiated (0 to 14 days). Subjects were given an oral prophylaxis and instructed in oral hygiene procedures. At the start of the bleaching procedure (treatment phase; 14 to 28 days) subjects received a bleaching kit containing 10 per cent carbamide peroxide, (Opalescence, Ultradent), their custom-fitted nightguard, and instructions on the application of the treatment solution. They were instructed to wear the nightguard with bleaching solution for eight hours each night for 14 nights. All patients were interviewed periodically to ensure there were no significant problems. At the end of the study (day 28), subjects were re-examined and the same questionnaire was administered. Pre- and posttreatment photographs were taken for each patient using a shade tab as a reference.

The enamel surface of tooth 11 was assessed using a scanning electron microscope (SEM) and a replicate impression technique. At the outset and conclusion of the 14-day bleaching period, two impressions of the maxillary central incisors were made using a conventional light body silicone impression material, (Extrude, Kerr,

Romulus, Mich.). The first impression acted as a scavenger to remove debris from the tooth surface and was discarded. The second impression, at both the pre- and posttreatment stage, was washed in distilled water and dried with a stream of oil-free air. The facial area of the upper right central incisor was cut out from each impression, mounted on a scanning electron microscope (SEM) stub, sputter coated with gold-palladium, and examined with a SEM (JEOL JSM-T330, JEOL Ltd, Tokyo, Japan). Photomicrographs (35x and 200x) were taken of the tooth surface. Pre- and posttreatment micrographs were assessed to determine if the bleaching treatment caused any distinguishable alteration to the enamel surface.

Results

All subjects in the study were females ranging in age from 20 to 42 years (mean age 35 ± 8.9 yrs.). One patient discontinued treatment after four days due to morning headaches that were attributed to wearing the nightguard. This subject was also concerned about an increase in the intensity of some white patches on her teeth. One month later, the pretreatment appearance of the white patches had disappeared and her headaches had gone. No further data was collected on this patient.

A. Patients Comments

At the end of the treatment phase, patients were asked to comment on the effects of the bleaching procedure. All patients noted that their teeth were lighter. Four patients (50 per cent) had anticipated that their teeth would be whiter at the conclusion of treatment; three were satisfied with the results; and one said that the final color of her teeth was whiter than she had expected. This patient was very pleased with the improvement.

One patient had mild grey and brown bands of tetracycline staining at the outset of the study. This patient also experienced lighter teeth. The banding attributed to the tetracycline staining was less noticeable and the patient was pleased with the improvement in



Fig. 1: Reservoirs of L-C Ultradent Block-out Resin painted on the facial surface of the teeth to be treated.

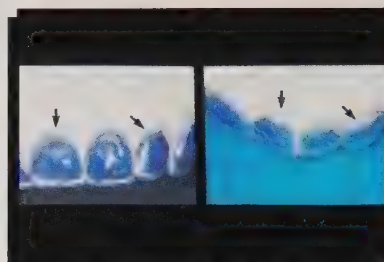


Fig. 2: Nightguard fitted to the cast. Arrows show where the nightguard has been trimmed 0.3 mm short of the free gingival margin to avoid tissue irritation.



Fig. 3: Pre- and post-bleaching photographs show tetracycline banding still evident on the anterior teeth despite the lightening effect of the bleaching treatment.

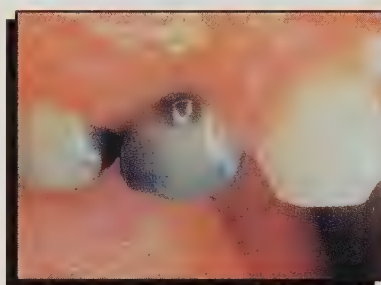


Fig. 4: Pre- and post-bleaching photographs of tooth 24 showing extensive cervical internal discoloration, possibly due to a leaky amalgam restoration.

color (**Fig. 3**). One patient reported experiencing slight morning nausea during the treatment phase, but it was not significant enough to deter her from completing the bleaching procedure.

The results of the questionnaire are reported in **Table I**. All patients reported an increase in hot and cold sensitivity the morning after each bleaching session, but this seemed to dissipate by noon each day. Apart from the mild tooth sensitivity, the home bleaching did not appear to affect any of the parameters evaluated. Four subjects reported seeing a dark line on the surface of some of their amalgam restorations when they removed the bleaching appliance in the morning. This discoloration was not evident at any examination,

and was apparently removed when the patients brushed their teeth and/or while they ate. One subject experienced a dark grey-blue discoloration at the cervical region of tooth 24 (**Fig. 4**). No cervical abnormality was evident, but this tooth had been endodontically treated and extensively restored. On closer examination, the MOD amalgam restoration was found to have defective and leaky margins.

B. Periodontal Parameters

The raw data for the entire group was recorded at each time period as a subject mean, standard deviation and range (**Table II**). Overall, these results show that the patients had a relatively healthy periodontium at the start of the study. The highest Periotron 6000 reading for any tooth was 25.4,

and the mean treatment scores were both 8.8. Since the Periotron 6000's manufacturer suggests that a reading of 0 to 20 indicates incipient gingivitis, the Periotron values obtained during this study support the clinical impression of a healthy periodontium for all patients. An analysis of variance (ANOVA; Stat View II, Abacus Concepts Inc., Berkeley, Calif., 1987) was applied to the data obtained from each patient to determine if significant differences, $p < 0.05$, occurred in the GCFF, PD, RC, BI and PI between the beginning and end of the two phases of the study (**Fig. 5**). Scheffé F-test for multiple comparisons (Stat View II, Abacus Concepts Inc., Berkeley, Calif., 1987) showed that three patients had a significant decrease, $p < 0.05$, in their GCFF during the hygiene phase. There was no significant change in the GCFF of any patient during the treatment phase. Two patients exhibited a significant decrease, $p < 0.05$, in their PD ($0.32 \pm 0.26 \mu\text{m}$) during the hygiene phase, while one patient exhibited a significant decrease, $p < 0.05$, in their RC ($0.31 \pm 0.26 \mu\text{m}$) during the treatment phase. There was no significant change in the PX, BI or the PI for any patient during either time period.

Representative SEM photomicrographs of the enamel surface, taken before and after 14 nights of home bleaching, can be seen in **Fig. 6**. Both pre- and posttreatment enamel surfaces appeared relatively flat and smooth. Assessment of all specimens at 35x and 200x magnification revealed that no visible change occurred in the enamel surface as a result of the bleaching treatment with the product tested.

Discussion

The results indicate that the home bleaching system used in this investigation (Opalescence) lightened the teeth in all eight subjects after two weeks of nighttime use. All patients experienced a slight increase in tooth sensitivity during the treatment period, but this dissipated rapidly, indicating that the 10 per cent carbamide peroxide caused a mild transient pulpitis. Hanks et al¹⁵ showed that

Table I**Results Of the Pre- and Posttreatment Questionnaire**

Subject	Tooth Sensitivity		Oral Ulceration		Sore Throat		Altered Taste		GI Problems		Bleeding Gums		TMJ/MPD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
A	0	+	0	0	0	0	0	0	0	0	+	0	+	+
B	0	+	0	0	0	0	0	0	0	0	0	0	+	+
C	+	+	0	0	0	0	0	0	0	0	0	0	+	+
D	0	+	0	0	0	0	0	0	colitis	nausea	0	0	0	0
E	0	+	0	0	0	0	0	0	0	0	0	0	0	0
F	+	+	0	0	0	0	0	0	0	0	0	0	0	0
G	0	+	0	0	0	0	0	0	0	0	0	0	0	0
H	0	+	0	0	0	0	0	0	0	0	0	0	0	0

0 = no symptoms; + = mild symptoms; ++ = moderate symptoms

Table II**The Subject Mean, Standard Deviation and (Range) Of the Group For GCFF, PD and RC.**

	Day 0	Day 14	Day 28
GCFF (Periotron)	12.9 ± 5.1 (2.1-20.4)	8.8 ± 7.1 (2.4-25.4)	8.8 ± 4.3 (5.0-17.9)
PD (mm)	1.34 ± 0.38 (1.00-2.13)	1.19 ± 0.27 (0.88-1.63)	1.28 ± 0.31 (1.00-1.88)
RC (mm)	0.38 ± 0.34 (0.00-1.00)	0.46 ± 0.45 (0.00-1.31)	0.41 ± 0.40 (0.00-0.94)
BI (per cent)	7.8 ± 17.6 (0.0-50.0)	4.7 ± 6.5 (0.0-12.5)	4.7 ± 9.3 (0.0-25.0)
PI (per cent)	9.4 ± 26.5 (0.0-75.0)	0.0 ± 0.0 (0.0-0.0)	0.0 ± 0.0 (0.0-0.0)

The BI and PI Are Reported As the Per Cent of Positive Sites; Mean, Standard Deviation, and Range.

10 per cent carbamide peroxide *in vitro* could penetrate through 0.5mm of dentin in one hour in sufficient quantities to be cytotoxic. This penetration of the bleaching solution through the dentin explains why Robertson and Melfi⁶ and Seale et al⁵ reported pulpal changes after hydrogen peroxide had been applied, and it may explain the sensitivity reported by the subjects in this study. The severity of the pulpal changes will be affected by the osmotic pressure of the bleaching gels, the positive pulpal pressure, and the thickness of the dentin. The influence of these factors may explain the difference between the *in vitro* results reported by Hanks et al¹⁵ and the clinical observation that pulpal death does not seem to

be a complication of home bleaching. Discoloration was noted about some amalgam restorations, but this was only a major problem with one restoration, which had defective and leaky margins. Apart from the myofacial pain experienced by one patient, there were no other clinically significant macroscopic alterations to either the periodontium or other tissues of the oral cavity.

As has been previously reported by others,^{12,15} the amount of tooth lightening varied between patients. Four subjects (50 per cent) were not completely satisfied, while the other four subjects were satisfied with the final result. In the authors' opinion, all subjects achieved a clinically noticeable improvement in the whiteness of

their teeth relative to the pretreatment shade tab. The low patient satisfaction rate may be due, in part, to the preparatory period prior to the treatment. As is often the case in dentistry, patient expectations frequently exceed possible outcomes. To offset the patient's unrealistic expectations, the practitioner should be conservative with regards to making claims of "whiter teeth."

The results of this study are similar to those reported by Kwong et al,¹⁶ who used a 10 per cent carbamide peroxide product every night for four weeks in 10 subjects. They reported a modest whitening in all subjects and an enthusiastic endorsement by three subjects. However, one subject was bitterly disappointed in the results, leading the authors to conclude that the outcome of home bleaching is unpredictable. These authors also looked at the effects of the carbamide peroxide on teeth that were to be extracted for orthodontic reasons. They found a mild to moderate inflammatory response in three out of seven teeth that had been bleached for two weeks. The odontoblast layer was intact in all sections and no changes were detected in the dentin.

The duration of the color change produced by this home bleaching technique is not yet known. Studies of single in-office bleaching treatments have not been promising. Rosensteil et al¹⁷ reported that the initial improve-

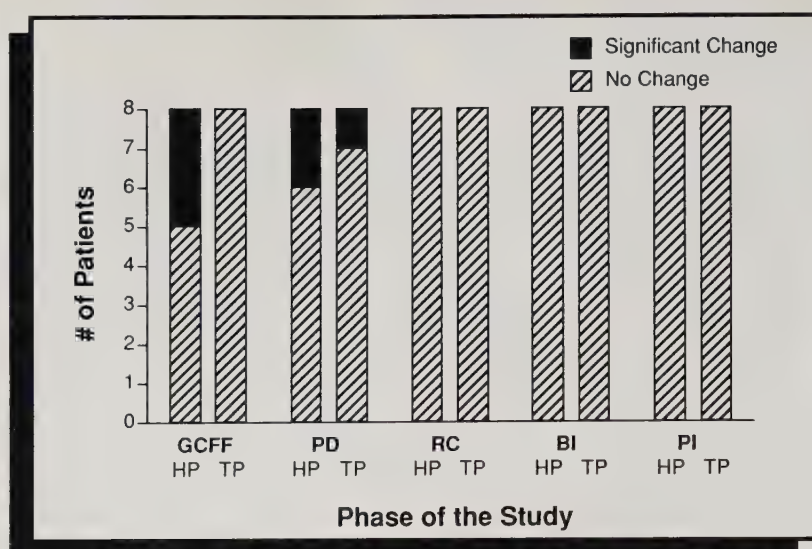


Fig. 5: Total number of patients showing significant change ($p < 0.05$) or no change in GCF, PD, RC, BI and PI between the beginning and end of each phase of the study. (HP = hygiene phase; TP = treatment phase).

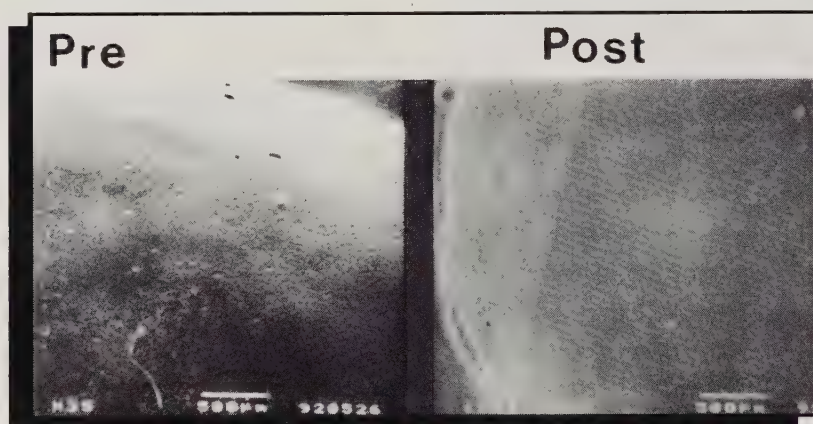


Fig. 6: Representative pre- and posttreatment SEM photomicrographs show no visible surface alterations due to the bleaching agent.

ment in color change appeared to be considerably reversed in nine of 10 subjects, three months after treatment, although all patients still had lighter teeth as measured by a colorimeter. Gegauff et al¹⁸ also measured color changes using a colorimeter and the CIELAB system. Measurements were taken before and after a five-day treatment phase involving eight hours of home bleaching with 10 per cent carbamide peroxide per day. They found that bleaching significantly reduced the yellowness of all the teeth. This effect was partially reversed within one week of treatment, but the color shift remained at the new level for the next three months, suggesting that the color change is stable after the initial color reversal. However, the subjects in this study were young, the teeth had no intrinsic or extrin-

sic discoloration, and the teeth were only bleached for five nights. Different results might have been obtained if the authors had looked at an older population with discolored teeth.

Color changes to resin restorations have also been investigated. Results indicate that in-office bleaching tends to lighten composite restorations, while there seems to be no color change attributable to home bleaching systems.^{19,20} No gross color changes were found in the composite restorations in this study.

The RC, BI and PI remained relatively unchanged for all patients during the two phases of the study. This is not unusual, given the study's short-term nature, as well as the fact that all patients were highly motivated dentally, and had entered the study with lit-

tle or no plaque. Two patients had a significant decrease in their PD during the hygiene phase, while one experienced a significant increase during the treatment phase. The mean changes observed in these three patients (0.31 to 0.32 mm) were relatively small, and the greatest single tooth PD change was 1.0 mm, and well within the limits attributable to probing technique error.²¹

The GCF has been shown to be a reliable indicator of gingival health and represents the first detectable change in inflamed periodontal tissues.²² Three patients had a significant decrease in the GCF during the hygiene phase, while no patients experienced changes during the treatment phase. Some decrease in the GCF was anticipated during the hygiene phase of this study due to the improved oral hygiene preparation. This would explain the reduction seen in three of the patients. The fact that there were no patients with a significant change during the treatment phase indicates that the treatment procedure had no substantial immediate effect on the periodontal tissues. This result was reproduced by Dickinson et al²³ in a study using 10 subjects and a 10 per cent carbamide home bleaching system. As reported in a 1994 IADR abstract, they measured the GI and the GCF using the Periotron, and found that there were no significant changes in GCF after seven days of home bleaching. The absence of change in the GCF is not surprising, since some studies have shown that carbamide peroxide reduces plaque as well as gingival inflammation.²⁴⁻²⁶ Scherer et al²⁷ monitored the gingival health of subjects using Rembrandt Lighten (Den-Mat Corporation, Santa Maria, Calif.) for six weeks. They measured the sulcular temperature and the enzyme activity, and found that the carbamide peroxide had a therapeutic effect on inflamed gingival tissues.

The observation that 14 nights of home bleaching had no marked visible effect on the enamel surface, as seen with the SEM photographs at 200x magnification, supports the *in vitro* results reported

by Haywood et al.²⁸ They showed that 10 per cent carbamide peroxide or 1.5 per cent hydrogen peroxide did not alter the enamel surface morphology even after the teeth had been in contact with the solutions for 250 hours. McGuckin et al.²⁹ reported that the enamel tended to be smoother after home bleaching solutions had been applied for eight hours a day for 30 days. Cooley and Burger³⁰ assessed the effect various bleaching agents had on the surface roughness of various resin materials. They found most bleaching agents, including 10 per cent carbamide peroxide, caused an increase in surface roughness on most of the materials studied. Nevertheless, only a few of these findings were statistically significant, and the clinical significance of *in vitro* enamel or resin surface alterations has yet to be determined. The impressions in this study were made several hours after the bleaching tray had been removed. This may have allowed remineralization of the enamel to occur.

A grey line discoloration on the surface of some amalgam restorations was a relevant clinical observation. Four patients noted this problem, which apparently occurred during the nighttime use of the bleaching agent. This discoloration was transient in nature, and the grey line was apparently washed away during the day through the action of the oral cavity. However, one tooth of one patient sustained significant internal discoloration due to the presence of an amalgam with a leaky margin. The discoloration may have been due to the amalgam or the root canal filling material leaking out into the cervical tubules and discoloring the tooth. These findings suggest that it would be advisable to look for defective amalgam restorations during the oral examination and restore them prior to bleaching.

There have been concerns that carbamide peroxide may potentiate the effects of other carcinogens. Weitzman et al.⁴ reported that three per cent hydrogen peroxide applied with a known carcinogen caused epidermoid carci-

noma in six out of 11 hamster cheeks. However, they did not test the effect of three per cent hydrogen peroxide alone, and their results should not be extrapolated to predict the effect of 10 per cent carbamide peroxide solutions with known carcinogens. Kwong et al.¹⁶ applied 10 per cent carbamide peroxide to hamster cheek pouches twice a day for up to four weeks. They found no histological changes in the soft tissues, but unfortunately they did not report how much carbamide peroxide was applied. In a review article, Heyward and Heymann¹¹ concluded that 10 per cent carbamide peroxide was as safe as most of the other esthetic treatments administered to patients on a routine basis. The authors agree with Tam³¹ that home bleaching is cosmetic in nature, not therapeutic, and that the outcome remains unpredictable. However, with proper informed consent and a correctly designed bleaching tray, dentist-supervised home bleaching using 10 per cent carbamide peroxide appears to be a viable alternative to the restorative procedures that might be used to give the patient a whiter smile. The effect of 10 per cent carbamide peroxide used alone, and in conjunction with a known carcinogen, should be further investigated to resolve the concerns about the potentiating effects of this peroxide solution in inducing carcinomas. In addition, the long term effects of using a home bleaching system should be investigated.

Conclusions

The short-term effects of a 14 day 10 per cent carbamide peroxide home bleaching system (Opalescence) were as follows:

- There were no significant, $p < 0.05$, overt short-term side effects of the treatment system on gingival crevicular fluid flow, recession, bleeding index or plaque index.
- All clinicians and patients agreed that their teeth were clinically lighter as a result of the bleaching treatment.
- Fifty per cent of patients were completely satisfied with the fi-

nal result. Patient satisfaction may be limited by their unrealistic expectations.

- The enamel surface appeared to be unaltered by the bleaching agent.
- One in nine patients developed headaches (myofacial pains) due to the use of the nightguard appliance, and discontinued treatment.
- Transient tooth sensitivity was common to all the patients, but this rapidly disappeared. ■

Acknowledgements: The authors would like to thank Ms. M. Venoit for her clinical assistance. This paper is based on an abstract presented at the IADR/AADR meeting in Chicago, Ill, in March 1993. The study was supported in part by Ultradent Dental Company, which supplied the materials.

Dr. Sterrett is an associate professor in the department of periodontics, School of Dentistry, Medical College of Georgia, Augusta, Georgia, U.S.A.

Dr. Price is an associate professor in the department of restorative dentistry, faculty of dentistry, Dalhousie University, Halifax, Nova Scotia.

Dr. Bankey is a certified periodontist practising in Oakville, Ontario.

References

1. Nova Scotia Dentist, *NSDA Newsletter* 2 Spec, Supp:5, 1991.
2. Ames, J.W. Removing stains from mottled enamel. *JADA* 24:1674-1677, 1937.
3. Goldstein, C.E., Goldstein, R.E., Feinman, R.A. et al. Bleaching vital teeth: state of the art. *Quintessence Int* 20:729-737, 1989.
4. Weitzman, S.A., Weitberg, A.B., Stossel, T.P. et al. Effects of hydrogen peroxide on oral carcinogenesis in hamsters. *J Periodontol* 57:685-688, 1986.
5. Seale, N.S., McIntosh, J.E. and Taylor, A.N. Pulpal reaction to bleaching of teeth in dogs. *J Dent Res* 60:948-953, 1981.
6. Robertson, W.D. and Melfi, R.C. Pulpal response to vital bleaching procedures. *J Endod* 6:645-649, 1980.
7. Titley, K.C., Torneck, C.D., Smith, D.C. et al. Adhesion of composite resin to bleached and unbleached bovine enamel. *J Dent Res* 67:1523-1528, 1988.
8. Titley, K.C., Torneck, C.D. and Smith, D.C. The effect of concentrated hydrogen peroxide solutions on the surface

TORADOL®

10 mg tablets & 30 mg/mL IM injections KETOROLAC TROMETHAMINE

Effectively treating acute pain

TORADOL® (ketorolac tromethamine) 10 mg tablets
TORADOL® IM (ketorolac tromethamine injection) 10 mg/mL or 30 mg/mL intramuscular injection
THERAPEUTIC CLASSIFICATION NSAID Analgesic Agent
ACTION

Toradol (ketorolac tromethamine) is a non-steroidal anti-inflammatory drug (NSAID) that exhibits analgesic activity mediated by peripheral effects. Ketorolac inhibits the synthesis of prostaglandins through inhibition of the cyclo-oxygenase enzyme system. At analgesic doses, it has minimal anti-inflammatory and antipyretic activity. Pain relief is comparable following the administration of ketorolac by intramuscular or oral routes. The peak analgesic effect occurs at 2-3 hours post-dosing with no evidence of a statistically significant difference over the recommended dosage range. The greatest difference between large and small doses of Toradol administered by either route is in the duration of analgesia. Ketorolac tromethamine is rapidly and completely absorbed when administered by either the oral or the intramuscular route. The pharmacokinetics are linear following single and multiple dosing. Steady state plasma levels are attained after one day of Q.I.D. dosing. Following oral administration, peak plasma concentrations of 0.7 to 1.1 µg/mL occur at an average of 44 minutes after a single 10 mg dose. The terminal plasma elimination half-life ranges between 2.4 and 9.0 hours in healthy adults, and between 4.3 and 7.6 hours in elderly subjects (mean age 72 yrs). A high fat meal decreases the rate, but not the extent, of absorption of oral ketorolac tromethamine. The use of an antacid has not been demonstrated to affect the pharmacokinetics of ketorolac. Following intramuscular administration, peak plasma concentrations of 2.2 to 3.0 µg/mL occur an average of 50 minutes after a single 30 mg dose. The terminal plasma half-life ranges between 3.5 and 9.2 hours in young adults and between 4.7 and 8.6 hours in elderly subjects (mean age = 72 years). In renally impaired patients there is a reduction in clearance and an increase in the terminal half-life of ketorolac tromethamine (see table below). The primary route of excretion of ketorolac tromethamine and its metabolites (conjugates and the p-hydroxy metabolite) is in the urine (91.4%) with the remainder (6.1%) being excreted in the feces. More than 99% of the ketorolac in plasma is protein bound over a wide concentration range. The parenteral administration of Toradol has not been demonstrated to affect the hemodynamics of anesthetized patients.

THE INFLUENCE OF AGE, LIVER AND KIDNEY FUNCTION ON THE CLEARANCE AND TERMINAL HALF-LIFE OF TORADOL IM¹ AND ORAL²

TYPES OF SUBJECTS	TOTAL CLEARANCE (in L/h/kg) ³		TERMINAL HALF-LIFE (in hours)	
	IM MEAN (range)	ORAL MEAN (range)	IM MEAN (range)	ORAL MEAN (range)
Normal Subjects IM (n=54) Oral (n=77)	0.023 (0.010-0.046)	0.025 (0.013-0.050)	5.3 (3.5-9.2)	5.3 (2.4-9.0)
Healthy Elderly Subjects IM (n=13), Oral (n=12) (mean age = 72, range = 65-78)	0.019 (0.013-0.034)	0.024 (0.018-0.034)	7.0 (4.7-8.6)	6.1 (4.3-7.6)
Patients with Hepatic Dysfunction IM and Oral (n=7)	0.029 (0.013-0.066)	0.033 (0.019-0.051)	5.4 (2.2-6.9)	4.5 (1.6-7.6)
Patients with Renal Impairment IM and Oral (n=9)(serum creatinine 1.9 - 5.0 mg/dL)	0.014 (0.007-0.043)	0.016 (0.007-0.052)	10.3 (8.1-15.7)	10.8 (3.4-18.9)
Renal Dialysis Patients IM (n=9)	0.016 (0.003-0.036)		13.6 (8.0-39.1)	

¹ Estimated from 30 mg single IM doses of ketorolac tromethamine

² Estimated from 10 mg single oral doses of ketorolac tromethamine

³ Litres/hour/kilogram

INDICATIONS

Oral Route: Orally administered Toradol (ketorolac tromethamine) is indicated for the short-term management (not to exceed 5 days for post-surgical patients or 7 days for patients with musculoskeletal pain) of moderate to moderately severe acute pain, including post-surgical pain (such as general, orthopaedic and dental surgery), acute musculoskeletal trauma pain and post-partum uterine cramping pain. (See WARNINGS and DOSAGE AND ADMINISTRATION)

Intramuscular Route: Intramuscular injection of Toradol is indicated for the short-term management (not to exceed 2 days) of moderate to severe acute pain, including pain following major abdominal, orthopaedic and gynecological operative procedures. The total duration of combined intramuscular and oral treatment should not exceed 5 days.

CONTRAINDICATIONS

Hypersensitivity: Like other non-steroidal anti-inflammatory drugs, Toradol (ketorolac tromethamine) has been associated with hypersensitivity reactions. Toradol should not be used when there is a known or suspected hypersensitivity to the drug and should be discontinued in patients who develop symptoms of hypersensitivity during therapy. Because of the possibility of cross-sensitivity, Toradol should not be used in patients with the complete or partial syndrome of nasal polyps, angioedema, bronchospastic reactivity (e.g. asthma) or other allergic manifestations to acetylsalicylic acid (ASA) or other non-steroidal anti-inflammatory drugs. Severe and fatal anaphylactoid reactions have occurred in such individuals.

Gastrointestinal: Toradol should not be used in patients with suspected or confirmed peptic ulcer disease, gastrointestinal bleeding or perforation, or active inflammatory disease of the gastrointestinal system or in patients who have a history of these disorders. Severe and fatal reactions have occurred in such individuals.

Renal Impairment: Toradol is contraindicated in patients with moderate to severe renal impairment or in patients at risk for renal failure due to volume depletion.

Haemorrhagic Risk: Toradol is contraindicated immediately before any major surgery, and is contraindicated intraoperatively when hemostasis is critical because of the increased risk of bleeding. Toradol is also contraindicated in patients with coagulation disorders, postoperative patients with high haemorrhagic risk or incomplete haemostasis, and in patients with suspected or confirmed cerebrovascular bleeding.

Obstetrics: Toradol is contraindicated in labour and delivery because, through its prostaglandin synthesis inhibitory effect, it may adversely affect fetal circulation and inhibit uterine musculature, thus increasing the risk of uterine hemorrhage.

Neuraxial Administration: Toradol IM is contraindicated for neuraxial (epidural or intrathecal) administration due to its alcohol content.

Concomitant Medications: Toradol is contraindicated in patients currently receiving ASA or NSAIDs because of the cumulative risks of inducing serious NSAID-related adverse events. The concomitant use of Toradol and probenecid is also contraindicated.

WARNINGS

The long-term administration of Toradol (ketorolac tromethamine) is not recommended as the incidence of side-effects increases with the duration of treatment (see INDICATIONS and DOSAGE AND ADMINISTRATION). The most serious risks associated with NSAIDs including Toradol are:

Gastrointestinal Ulcerations, Bleeding and Perforation: Serious gastrointestinal toxicity, such as bleeding, ulceration, and perforation, can occur at any time, with or without warning symptoms, during therapy with non-steroidal anti-inflammatory drugs. The incidence of gastrointestinal complications increases with dosage and duration of treatment. Elderly and debilitated patients are more susceptible to these complications. To date, studies with NSAIDs have not identified any subset of patients not at risk for developing peptic ulceration and bleeding. Post-marketing experience with Toradol suggests that there may be a greater risk of gastrointestinal ulcerations, bleeding, and perforation in the elderly, and most spontaneous reports of fatal gastrointestinal events are in the aged population.

THE LONG-TERM USE OF TORADOL IS NOT RECOMMENDED.

Renal Toxicity: The following renal abnormalities have been associated with Toradol and other drugs that inhibit renal prostaglandin biosynthesis: acute renal failure, nephrotic syndrome, interstitial nephritis, renal papillary necrosis. Elevations of blood urea nitrogen (BUN) and creatinine have been reported in clinical trials with ketorolac tromethamine. Toradol is contraindicated in patients with moderate to severe renal impairment. Hypovolemia should be corrected before treatment with Toradol is initiated. Patients who are volume depleted may be dependent on renal prostaglandin production to maintain renal perfusion and, therefore, glomerular filtration rate. In such patients, the use of drugs which inhibit prostaglandin synthesis has been associated with further decreases in renal blood flow and may precipitate acute renal failure. Predisposing factors include dehydration (e.g. as a result of extreme exercise, vomiting or diarrhea associated with the loss of at least 5 to 10% of total body weight, unreplenished blood loss of approximately 500 mL), sepsis, impaired renal function, heart failure, liver dysfunction, diuretic therapy, and advanced age. Caution is advised if ketorolac tromethamine is used in such circumstances. Close monitoring of urine output, serum urea and serum creatinine is recommended until renal function recovers.

Fluid Retention and Edema: Fluid retention, edema, NaCl retention, oliguria, elevations of serum urea nitrogen and creatinine have been observed in patients treated with Toradol. Therefore, the possibility of precipitating congestive heart failure in elderly patients or those with compromised cardiac function should be considered. Toradol should be used with caution in patients with cardiac decompensation, hypertension or other conditions which cause a predisposition to fluid retention.

Haemorrhage: Postoperative haematomas and other symptoms of wound bleeding have been reported in association with the perioperative use of intramuscular Toradol. Toradol is contraindicated in patients who have coagulation disorders. If Toradol is to be administered to patients who are receiving drug therapy that interferes with haemostasis, careful observation is advised. Use of Toradol in patients who are receiving therapy that affects hemostasis should be undertaken with caution, including close monitoring. The concurrent use of Toradol and prophylactic, low dose heparin (2500-5000 units q12h), warfarin and dextrans may also be associated with an increased risk of bleeding (see DRUG INTERACTIONS). In patients receiving anticoagulants, the risk of intramuscular haematoma formation from Toradol IM injections is increased.

Hypersensitivity Reactions: The possibility of severe or fatal hypersensitivity reactions should be considered, even for patients with no known history of previous exposure or hypersensitivity to Toradol or other NSAIDs. Counteractive measures must be available when administering the first dose of Toradol IM. As with other NSAIDs, patients should be questioned for history of allergy to NSAIDs or ASA or for the syndrome consisting of nasal polyps, ASA allergy and asthma before being prescribed Toradol. Asthmatic patients with triad asthma (the syndrome of nasal polyps, asthma and hypersensitivity to ASA or other NSAIDs) may be at particular risk for severe hypersensitivity reactions.

Use in Pregnancy and Lactation: The administration of ketorolac tromethamine is not recommended during pregnancy or lactation. After 1 day at 10 mg q.i.d. oral dosing, Toradol has been detected in the milk of lactating women at a maximum concentration of 7.9 ng/mL.

Use in Children: Safety and efficacy in children have not been established. Therefore, Toradol is not recommended for use in children under age 16.

Use in the Elderly: Because ketorolac is cleared somewhat more slowly by the elderly (See PHARMACOKINETICS) who are also more sensitive to the gastrointestinal and renal effects of NSAIDs, (See WARNINGS and PRECAUTIONS) extra caution and the lowest effective dose (See DOSAGE AND ADMINISTRATION) should be used.

PRECAUTIONS

Physicians should be alert to the pharmacologic similarity of Toradol (ketorolac tromethamine) to other non-steroidal anti-inflammatory drugs that inhibit cyclo-oxygenase.

Gastrointestinal Effects: Close medical supervision is recommended in patients prone to gastrointestinal tract irritation. In these cases, the physician must weigh the benefits of treatment against the possible hazards. Patients taking any NSAID including ketorolac tromethamine should be instructed to contact a physician immediately if they experience symptoms or signs suggestive of peptic ulceration or gastrointestinal bleeding. These reactions can occur at any time during the treatment. If peptic ulceration is suspected or confirmed, or if gastrointestinal bleeding occurs, ketorolac tromethamine should be discontinued and appropriate treatment instituted with close patient monitoring.

Hepatic Effects: Caution should be observed if Toradol is to be used in patients with impaired hepatic function, or a history of liver disease. Treatment with Toradol may cause elevations of liver enzymes, and in patients with pre-existing liver dysfunction, it may lead to the development of a more severe hepatic reaction. Meaningful elevations (greater than 3 times normal) of serum transaminases (glutamate pyruvate [SGPT or ALT] and glutamic oxaloacetic [SGOT or AST], occurred in controlled clinical trials in less than 1% of patients. If clinical signs and symptoms consistent with liver disease develop, or if systemic manifestations occur (e.g., eosinophilia, rash, etc.), ketorolac tromethamine should be discontinued. Patients with impaired hepatic function from cirrhosis do not have any clinically important changes in ketorolac tromethamine clearance. Studies in patients with active hepatitis or cholestasis have not been performed.

Hematologic Effects: Ketorolac tromethamine inhibits platelet function and may prolong bleeding time. It does not affect platelet count, prothrombin time (PT) or partial thromboplastin time (PTT). Unlike the prolonged effects from ASA the inhibition of platelet function by ketorolac tromethamine is normalized within 24 to 48 hours after the drug is discontinued. Blood dyscrasias associated with the use of NSAIDs are rare, but could occur with severe consequences.

Infection: In common with other non-steroidal anti-inflammatory drugs, ketorolac tromethamine may mask the usual signs of infection.

DRUG INTERACTIONS

Protein Binding: Toradol (ketorolac tromethamine) is highly bound to human plasma protein (mean 99.2%) and binding is independent of concentration. As ketorolac tromethamine is a highly potent drug and present in low concentrations in plasma, it would not be expected to displace other protein-bound drugs significantly. Therapeutic concentrations of digoxin, warfarin, acetaminophen, phenytoin, and tolbutamide did not alter ketorolac tromethamine protein binding.

Anticoagulant Therapy: Prothrombin time should be carefully monitored in all patients receiving oral anticoagulant therapy concomitantly with ketorolac tromethamine. Toradol IM given with two doses of 5000 U of heparin to 11 healthy volunteers, resulted in a mean template bleeding time of 6.4 min (3.2-11.4 min) compared to a mean of 6.0 min (3.4-7.5 min) for heparin alone and 5.1 min (3.5-8.5 min) for placebo. The *in vitro* binding of warfarin to plasma proteins is only slightly reduced by ketorolac tromethamine (99.5% control vs. 99.3%) at plasma concentrations of 5 to 10 µg/mL.

Digoxin: Ketorolac tromethamine does not alter digoxin protein binding.

Salicylates: *In vitro* studies indicated that, at therapeutic concentrations of salicylates (300 µg/mL), the binding of ketorolac tromethamine was reduced from approximately 99.2% to 97.5% representing a potential two-fold increase in unbound Toradol plasma levels.

Enzyme Induction: There is no evidence, in animal or human studies, that ketorolac tromethamine induces or inhibits the hepatic enzymes capable of metabolizing itself or other drugs. Hence, it would not be expected to alter the pharmacokinetics of other drugs due to enzyme induction or inhibition mechanisms.

Probenecid: Concomitant administration of ketorolac tromethamine and probenecid results in the decreased clearance of ketorolac and a significant increase in ketorolac plasma levels (approximately three-fold increase) and terminal half-life (approximately two-fold increase). The concomitant use of Toradol and probenecid is, therefore, contraindicated.

Furosemide: Ketorolac tromethamine reduces the diuretic response to furosemide by approximately 20% in normovolemic subjects.

Lithium: Some NSAIDs have been reported to inhibit renal lithium clearance, leading to an increase in plasma lithium concentrations and potential lithium toxicity. The effect of ketorolac tromethamine on lithium plasma levels has not been studied.

Methotrexate: The concomitant administration of methotrexate and some NSAIDs has been reported to reduce the clearance of methotrexate, thus enhancing its toxicity. The effect of ketorolac tromethamine on methotrexate clearance has not been studied.

ACE Inhibitors: Concomitant use of ACE inhibitors and other NSAIDs may increase the risk of renal impairment, particularly in volume depleted patients.

Morphine: Intramuscular Toradol has been administered concurrently with morphine in several clinical trials of postoperative pain without evidence of adverse interactions.

**ADVERSE EVENTS
TORADOL TABLETS**

Short-Term Patient Studies

The incidence of adverse reactions in 371 patients receiving multiple 10 mg doses of Toradol (ketorolac tromethamine) for pain resulting from surgery or dental extraction during the post operative period (less than 2 weeks) is listed below. These reactions may or may not be drug related.

Incidence Between 4 and 9%: Nervous System: Somnolence, insomnia. **Digestive System:** Nausea. **Incidence Between 2 and 3%: Nervous System:** Nervousness, headache, dizziness. **Digestive System:** Diarrhea, dyspepsia, gastrointestinal pain, constipation. **Body As A Whole:** Fever. **Incidence 1% or Less: Nervous System:** Abnormal dreams, anxiety, dry mouth, hyperkinesia, paresthesia, increased sweating, euphoria, hallucinations. **Digestive System:** Anorexia, flatulence, vomiting, stomatitis, gastritis, gastrointestinal disorder, sore throat. **Body As A Whole:** Asthenia, pain, back pain. **Cardiovascular System:** Vasodilatation, palpitation, migraine, hypertension. **Respiratory System:** Cough increased, rhinitis, dry nose. **Musculo-skeletal System:** Myalgia, arthralgia. **Skin & Appendages:** Rash, urticaria. **Special Senses:** Blurred vision, ear pain. **Urogenital System:** Dysuria.

Long-Term Patient Study

The adverse reactions listed below were reported to be probably related to study drug in 553 patients receiving long-term oral therapy (approximately 1 year) with Toradol.

Incidence Between 10 and 12%: Digestive System: Dyspepsia, gastrointestinal pain. **Incidence Between 4 and 9%: Digestive System:** Nausea, constipation. **Nervous System:** Headache. **Incidence Between 2 and 3%: Digestive System:** Diarrhea, flatulence, gastrointestinal fullness, peptic ulcers. **Nervous System:** Dizziness, somnolence. **Metabolic/Nutritional Disorder:** Edema. **Incidence 1% or Less: Digestive System:** Eructation, stomatitis, vomiting, anorexia, duodenal ulcer, gastritis, gastrointestinal haemorrhage, increased appetite, melena, mouth ulceration, rectal bleeding, sore mouth. **Nervous System:** Abnormal dreams, anxiety, depression, dry mouth, insomnia, nervousness, paresthesia. **Special Senses:** Tinnitus, taste perversion, abnormal vision, blurred vision, deafness, lacrimation disorder. **Metabolic/Nutritional Disorder:** Weight gain, alkaline phosphatase increase, BUN increased, excessive thirst, generalized edema, hyperuricemia. **Skin & Appendages:** Pruritus, rash, burning sensation skin. **Body as a Whole:** Asthenia, pain, back pain, face edema, hema. **Musculo-skeletal System:** Arthralgia, myalgia, joint disorder. **Cardiovascular System:** Chest pain, chest pain substernal, migraine. **Respiratory System:** Dyspnea, asthma, epistaxis. **Urogenital System:** Hematuria, increased urinary frequency, oliguria, polyuria. **Hemic & Lymphatic:** Anemia, purpura.

TORADOL IM

The adverse reactions listed below were reported in Toradol IM clinical efficacy trials. In these trials patients (N=660) received either single 30 mg doses (N=151) or multiple 30 mg doses (N=509) over a time period of 5 days or less for pain resulting from surgery. These reactions may or may not be drug related.

Incidence Between 10 and 13%: Nervous System: Somnolence. **Digestive System:** Nausea. **Incidence Between 4 and 9%: Nervous System:** Headache. **Digestive System:** Vomiting. **Injection Site:** Injection site pain. **Incidence Between 2 and 3%: Nervous System:** Sweating, dizziness. **Cardiovascular System:** Vasodilatation.

Incidence 1% or Less: Nervous system: Insomnia, increased dry mouth, abnormal dreams, anxiety, depression, paraesthesia, nervousness, paranoid reaction, speech disorder, euphoria, libido increased, excessive thirst, inability to concentrate, stimulation. **Digestive system:** Flatulence, anorexia, constipation, diarrhea, dyspepsia, gastrointestinal fullness, gastrointestinal haemorrhage, gastrointestinal pain, melena, sore throat, liver function abnormalities, rectal bleeding, stomatitis. **Cardiovascular system:** Hypertension, chest pain, tachycardia, haemorrhage, palpitation, pulmonary embolus, syncope, ventricular tachycardia, pallor, flushing. **Injection site:** Injection site reaction. **Body as a Whole:** Asthenia, fever, back pain, chills, pain, neck pain. **Special senses:** Taste perversion, tinnitus, blurred vision, diplopia, retinal haemorrhage. **Musculo-skeletal system:** Myalgia, twitching. **Respiratory system:** Asthma, cough increased, dyspnea, epistaxis, hiccup, rhinitis. **Skin and appendages:** pruritus, rash, subcutaneous hematoma, skin disorder. **Urogenital system:** Dysuria, urinary retention, oliguria, increased urinary frequency, vaginitis. **Metabolic/nutritional disorders:** edema, hypokalemia, hypovolemia. **Hemic and lymphatic system:** Anemia, coagulation disorder, purpura.

Postmarketing Experience

The following postmarketing adverse experiences have been reported for patients who have received either formulation of Toradol: **Renal Events:** Acute renal failure, flank pain with or without haematuria and/or azotemia, nephritis, hyponatremia, hyperkalemia, hemolytic uremic syndrome, urinary retention. **Hypersensitivity reactions:** Bronchospasm, laryngeal edema, asthma, hypotension, flushing, rash, anaphylaxis, and anaphylactoid reactions. Such reactions have occurred in patients with no prior history of hypersensitivity. **Gastrointestinal Events:** Gastrointestinal hemorrhage, peptic ulceration, gastrointestinal perforation, pancreatitis, melena. **Hematologic Events:** Postoperative wound haemorrhage, rarely requiring blood transfusion (see PRECAUTIONS), thrombocytopenia, epistaxis, leukopenia. **Central Nervous System:** Convulsions, abnormal dreams, hallucinations, hyperkinesia, hearing loss, aseptic meningitis, extrapyramidal symptoms. **Hepatic Events:** Hepatitis, liver failure, cholestatic jaundice. **Cardiovascular:** Pulmonary edema, hypotension, flushing. **Dermatology:** Lyell's syndrome, Stevens-Johnson syndrome, exfoliative dermatitis, maculopapular rash, urticaria. **Body as Whole:** infection.

OVERDOSAGE

In a gastroscopic study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused pain and peptic ulcers which resolved after discontinuation of dosing. Metabolic acidosis has been reported following intentional overdosage. Single oral doses of 200 mg have been administered to patients with no apparent serious side effects. Dialysis does not appreciably clear ketorolac from the blood stream.

DOSAGE AND ADMINISTRATION

Adults: Dosage should be adjusted according to the severity of the pain and the response of the patient. **Oral:** The usual oral dose of Toradol (ketorolac tromethamine) is 10 mg every 4 to 6 hours for pain as required. Doses exceeding 40 mg per day are not recommended. The maximum duration of treatment with the oral formulation is 5 days for post-surgical patients and 7 days for patients with musculoskeletal pain.

Intramuscular: The recommended usual initial dose is 10-30 mg, according to pain severity. Subsequent dosing may be 10 mg to 30 mg every 4-6 hours as needed to control pain. The lowest effective dose should be administered. The administration of Toradol IM should be limited to short-term therapy (not over 2 days). The total daily dose should not exceed 120 mg because the risk of toxicity appears to increase with longer use at recommended doses (see WARNINGS and PRECAUTIONS). The administration of continuous multiple daily doses of Toradol IM has not been extensively studied. There has been limited experience with intramuscular dosing for more than 3 days since the vast majority of patients have transferred to oral medication or no longer required analgesic therapy after this time.

If supplementary analgesia is required, a concomitant low dose of opiate can be used.

Patients Under 50 kg, Over Age 65 Years, or With Less Severe Pain at Baseline:

Oral: The lowest effective dose is recommended.

Parenteral: The lower end of the dosage range is recommended. The initial dose should be 10 mg. The total daily dose of Toradol IM in the elderly should not exceed 60 mg.

Impaired Renal Function:

Toradol is not recommended for patients with moderate to severe renal impairment.

Conversion from Parenteral to Oral Therapy:

Toradol tablets may be used either as monotherapy or as follow-on therapy to parenteral ketorolac. When Toradol tablets are used as a follow-on therapy to parenteral ketorolac, the total combined daily dose of ketorolac (oral + parenteral) should not exceed 120 mg in younger adult patients or 60 mg in elderly patients on the day the change of formulation is made. On subsequent days, oral dosing should not exceed the recommended daily maximum of 40 mg. Toradol IM should be replaced by an oral analgesic as soon as feasible. The total duration of combined intramuscular and oral treatment should not exceed 5 days. Parenteral drug products should be inspected visually for particulate material and discoloration prior to use.

Toradol (ketorolac tromethamine) is a Schedule F drug.

Stability and Storage Recommendations

Toradol Tablets: Store at room temperature with protection from light.

Toradol IM: Store at room temperature with protection from light.

Availability of Dosage Forms

Toradol (ketorolac tromethamine) is available as 10 mg white round film coated tablets with one side printed in red with TORADOL inside bold T and other side with Syntex. Toradol (ketorolac tromethamine) 10 mg tablets are available in bottles of 100 and 500 tablets.

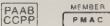
Toradol IM is available in 1 mL ampoules (trays of 10) containing 10 or 30 mg/mL.

Product Monograph available on request.

References: **2.** TORADOL Product Monograph, Syntex Inc., Dec. 1992. **3.** Rooks WH II. *Pharmacother* 1990;10(6 Pt 2):30S-32S. **4.** Yee JP et al. *Pharmacother* 1986; 6(5):253-61. **5.** Brown CR et al. *Pharmacother* 1990; 10(6 Pt 2):45S-50S. **6.** O'Hara DA et al. *Clin Pharmacol Ther* 1987; 41:556-61. **7.** Fragen RJ. Data on File, Syntex Inc., Document CL3837. **8.** Cherry C et al. Data on File, Syntex Inc., Document CL3835. **1987. 9.** Stanski DR et al. *Pharmacother* 1990; 10(6 Pt 2):40S-44S. **10.** Data on File, Syntex Inc., Document #90027-1, 1989. **13.** Stahlgren L. Data on File, Syntex Inc., Document RS-37619, 1991. **16.** Data on File, Syntex, Document #90027-2, 1989. **17.** Forbes JA et al. *Pharmacother* 1990;10(6 Pt 2):77S-93S. **18.** Forbes JA et al. *Pharmacother* 1990; 10(6 Pt 2):94S-105S. **21.** Data on File, Syntex Inc., Document #90027-3, May 1990. **22.** Mehlich D et al. Data on File, Syntex Inc., Document CL3686, 1986. **23.** Oosterlinck W et al. *J Clin Pharmacol* 1990; 30: 336-41. **24.** Cutting CJ et al. Data on File, Syntex Inc., Document CL4740, 1989. **25.** Diebschlag W and Nocker W. Data on File, Syntex Inc., Document CL5468, 1990. **26.** Molinie J et al. Data on File, Syntex Inc., Document CL4624, 1988. **27.** Herrera JMC et al. Data on File, Syntex Inc., Document CL4886, 1989. **30.** American Pain Society. *Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain*, 3rd edition, 1992. **36.** Huttman W et al. Data on File, Syntex Inc., Document CL4882, 1989. **38.** Bloomfield S et al. *Pharmacother* 1986;6(5):247-52. **39.** Sunshine A et al. Data on File, Syntex Inc., Document CL3674, 1986. **46.** Vangen O et al. *J Int Med Res* 1988;16:443-51. **48.** Brown J. *Clin Pharmacol Ther* 1993;53:222. **52.** Cataldo PA et al. *Surg Gynecol Obstet* 1993;176:435-8. **54.** Inklaar H et al. Data on File, Syntex Inc., Document CL3549, 1986. **55.** Yee JP et al. Data on File, Syntex Inc., Document CL3849, 1987. **56.** Tommerasen M et al. *Surg Forum* 1992;43:510-2. **57.** Steele R and Durwood EN Jr. *South Med J* 1992;85:3S-103. **58.** Forrest JB et al. *J Dev Clin Med* 1992;10(3):129-50. **59.** Stahlgren L et al. *Clin Ther* 1993;15(3):570-80. **60.** Launo C et al. *Minerva Anestesiol* 1991;57:1092-3. **61.** Bosek V et al. *J Clin Anesth* 1992;4:480-3. **62.** Fricke J et al. *Clin Ther* 1993; 15(3): 500-507.



Hoffmann-La Roche Limited,
Mississauga, Ontario L5N 6L7



'Roche' and the  are registered Trade Marks owned by Hoffmann-La Roche Limited, Mississauga, Ontario and are used under license. *Registered Trade Mark used under license.



morphology of human tooth enamel. *J Endod* 14:69-74, 1988.

9. Madison, S. and Walton, R. Cervical root resorption following bleaching of endodontically treated teeth. *J Endod* 16:570-574, 1990.

10. Haywood, V.B. and Heymann, H.O. Nightguard vital bleaching. *Quintessence Int* 20:173-176, 1989.

11. Lightening natural teeth. Ed. Albers H.F. Santa Rosa, Calif. *Adept Report* 2:10-12, 1991.

12. Simon, J.F., Allen, H., Woodson, R.G. et al. Efficacy of vital home bleaching. *Calif Dent J* 21:72-75, 1993.

13. Haywood, V.B. and Heymann, H.O. Nightguard vital bleaching: how safe is it? *Quintessence Int* 22:515-523, 1991.

14. Howard, W.R. Patient-applied tooth whiteners: are they safe, effective with supervision? *JADA* 123:57-60, 1992.

15. Hanks, C.T., Fat, J.C., Wataha, J.C. et al. Cytotoxicity and dentin permeability of carbamide peroxide and hydrogen peroxide vital bleaching materials, in vitro. *J Dent Res* 72:931-938, 1993.

16. Kwong, K., Mohamed, S., McMillan, M.D., et al. Evaluation of a 10 per cent carbamide peroxide gel vital bleaching agent. *New Zealand Dent J* 89:18-22, 1993.

17. Rosenstiel, S.F., Gegauff, A.G. and Johnston, W.M. Duration of tooth color change after bleaching. *JADA* 123:54-59, 1991.

18. Gegauff, A.G., Rosenstiel, S.F., Langhout, K.J. et al. Evaluating tooth color change from carbamide peroxide gel. *JADA* 124, 65-72, 1993.

19. Monaghan, P., Trowbridge, T., and Lautenschlager, E. Composite resin color change after vital tooth bleaching. *J Prosth Dent* 67:778-781, 1992.

20. Monaghan, P., Lim, E. and Lautenschlager, E. Effect of home bleaching preparations on composite resin color. *J Prosth Dent* 68:575-578, 1992.

21. Haffajee, A.D., Socransky, S.S. and Goodson, J.M. Comparison of different data analyses for detecting changes in attachment level. *J Clin Periodont* 10:298-310, 1983.

22. Tsuchida, K. and Hara, K. Clinical significance of gingival fluid measurement by Periotron. *J Periodontol* 52: 697-700, 1981.

23. Dickinson, G.L., Curtis, J.W., Myers, M.L. et al. Effects of a patient applied bleaching agent on oral soft tissues. *J Dent Res* 73: IADR Abstract # 2236, 381, 1994.

24. Tartakow, D.J., Smith, R.S. and Spinelli, J.A. Urea peroxide solution in the treatment of gingivitis in orthodontics. *Am J Orthod* 73:560-567, 1978.

25. Shapiro, W.B., Kaslick, R.S., Chasens, A.I. et al. The influence of urea peroxide gel on plaque, calculus and chronic gingival inflammation. *J Periodontol* 44:636-639, 1973.

26. Reddy, J. and Salkin, L.M. The effect of a urea peroxide rinse on dental plaque and gingivitis. *J Periodontol* 47:607-610, 1976.

27. Scherer, W., Palat, M., Hittelman, E. et al. At-home bleaching system: Effect on gingival tissue. *J Esthet Dent* 1992: 4, 86-89, 1992.

28. Haywood, V.B., Houck, V.M. and Heymann, H.O. Nightguard vital bleaching: Effects of various solutions on enamel surface texture and color. *Quintessence Int* 22:54-59, 1991.

29. McGuckin, R.S., Babin, J.F. and Meyer, B.J. Alterations in human enamel surface morphology following vital bleaching. *J Prosthet Dent* 68:754-760, 1992.

30. Cooley, R.L. and Burger, K.M. Effect of carbamide peroxide on composite resins. *Quintessence Int* 22:817-821, 1991.

31. Tam, L. Vital tooth bleaching: Review and current status. *JCDA* 58: 654-663, 1992.

ADVERTISERS' INDEX

A-dec	369
American Dental Assoc ...	438
Ash Temple.	IFC, 410, 411
Bank of Nova Scotia	440
Bego Canada	396, 397
Bisco Dental	IBC
CDA Communiqué	376
CDA Leasing	374
CDAnet	443
CDA RSP	383
CDA Taking Care of Business	450, 451
CDSPI	439
DCF	449
Dentsply	377
Fortune Practice Management	391
Hoechst-Roussel	370
Hoffman La Roche	400, 418, 419
Ivoclar Vivadent	387, 444
Ivoclar Williams	372
Kerr Canada	399
Maxim Computers	384
Premier Dental	364, 368
SAAB	388
Warner Lambert	OBC, 394

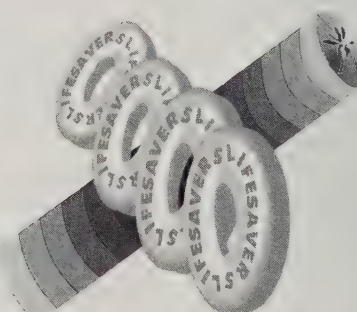
DID YOU KNOW?

Ingenuity Pays

In 1912 a Cleveland candy maker named Clarence Crane decided to make a mint to sell in the summer. Until then, most mints were imported from Europe. Crane figured he could cut the price by making them in the United States.

He had the candy manufactured by a pill-maker who discovered that his machinery would only work if it punched a hole in the middle of each candy.

So Crane cleverly called the mints Lifesavers.



JOURNAL

May/
Mai
1995
Vol. 61
No. 5



Convention Social Program: *Your Introduction to Ottawa's Best*



The Social Program at the CDA 1995 Convention this summer will take you to some of the best locations and venues to be found in the city of Ottawa. The Organizing Committee has endeavoured to not only create enjoyable events but also to bring you to some of the more impressive sites.

To launch our Convention, the **Opening Ceremony** will be held on Sunday, August 27th at the National Arts Centre, located just steps away from Parliament Hill. Participants will enjoy this event in the elegant Opera Hall. This hall is equipped with an acoustically-transparent, decorative ceiling that carries great sound in a beautifully designed setting. The NAC has hosted nearly every kind of show imaginable from big Broadway shows and children's plays to the most famous ballets and the greatest music concerts.

Following the Opening Ceremony, there will be a **Meet & Greet** event. This event will be held in the Panorama room of the National Arts Centre. This section of the NAC stretches out to the Rideau Canal and during the warm summer months it overlooks decorated trees lining the canal with lights giving the surrounding an almost fairy tale atmosphere.

Monday evening beginning at 7:00 p.m. with cocktails, the **President's Gala** will be in full swing! This evening will highlight the era of the 50's and early 60's. A local band playing tunes that will rekindle your memories will be your entertainment for the evening in a decor that will transport you directly back to the era.

On Tuesday evening, the Ottawa Dental Society will host a **Wine Tasting Reception** at the National Gallery of Canada. The Gallery overlooks the Ottawa River and is a striking landmark in the Capital's skyline. Participants have the opportunity to savour the best spirits to be found in regional vineyards! Don't miss this opportunity to enjoy a grand selection of diverse wines.

Two exciting days have been arranged for our **Spouses' Program**. Monday's program consists of a tour around prominent historical sites ending with a luncheon and tour

at the National Gallery of Canada. A visit to this outstanding museum brings you to one of the most beautiful and innovative buildings in Canada. Light, spacious galleries and quiet courtyards lead you on a journey of discovery through world renowned art collections.

Tuesday will be a day trip to the charming village of Merrickville — a village which has preserved history dating back to the 1790's. Here, a walking tour will take place followed by an outdoor luncheon at a quaint old inn. The afternoon will then be at your leisure to browse through and shop in the village's many antique and craft stores.

Our **Children's Program** features the National Museum of Science and Technology and the Wave Pool on Monday's outing. This museum is irresistible to children of all ages as they stop at learning stations about the earth, space, agriculture, technology, communications and much more! The highlights on Tuesday's program include the Canadian Museum of Civilization and the Log Farm. The Canadian Museum of Civilization boasts vivid displays of history and heritage with a newly renovated children's exhibit enabling them to participate in and experience various civilizations worldwide.

In addition, the 1995 Convention is also offering a **Golf Tournament** sponsored by Aurum Ceramic/Classic and Dentistry Canada Fund scheduled for Sunday morning. A **Fun Run and Walk** on Tuesday morning along the Rideau Canal will be a great way to start your day!

The CDA 1995 Convention is for you, your family and your dental team! There are many events to choose from. We hope that you will plan to attend. We look forward to welcoming you to the CDA 1995 Convention and introducing you to some of Ottawa's best.

Joel Eisenstat, D.D.S.
Organizing Committee
CDA 1995 Convention
Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

Tel.: 1-800-267-6354
Fax: (613) 523-3062

WHAT'S IN TOWN... while you're in town?

Come to OTTAWA a few days early, or stay a couple of days longer, to discover all that the region has to offer. Here's a sampling of activities that await your arrival ...

UNTIL AUGUST 27

Changing the Guard, (613) 239-5000

This daily ceremony of pomp and pageantry on Parliament Hill is one of Ottawa's highlights.

AUGUST 17-27

Central Canada Exhibition, (613) 237-7222

Bring the kids to the midway, or enjoy top-name entertainers at Ottawa's largest summer fair.

AUGUST 26-27

Ottawa Valley Folk Festival, (613) 788-2898

There's lots of fun and good tunes at this festival on Victoria Island.

AUGUST 29, 30, SEPTEMBER 1, 2

Triple A Baseball, (613) 749-9947

Ottawa Lynx vs. Syracuse Chiefs — see preliminary program or contact CDA Conventions for tickets

Ottawa Lynx vs. Pawtucket Red Sox

SEPTEMBER 1 - 4

Gatineau Hot Air Balloon Festival

Balloons of all sizes and shapes fill the sky with colour during this festival and competition

ONGOING

The Queen's Pictures: Old Masters from the Royal Collection

National Gallery of Canada, (613) 990-1985

Catch it here — North America's only showing of paintings on loan from the Queen!

Connexions

National Museum of Science and Technology, (613) 991-3044

NEW: Canada's largest exhibit displaying the evolution of communications

Artflight '95

National Aviation Museum, (613) 993-2010

Display of award-winning aviation art focussing on Canadian military aircraft.

Earthquest

Canadian Museum of Nature, (613) 990-2200

Interactive fun for everyone!

Remember: Reduce, Re-use and Recycle!

Mystery of the Maya

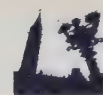
Canadian Museum of Civilization, (819) 776-7000

Spectacular IMAX film exploring the culture, science, and history of the Maya.



OTTAWA 1995
August 26 - 29

FOR YOUR INFORMATION



OTTAWA 1995
August 26 - 29

Hands-On Courses

The following hands-on courses are offered as part of the scientific program. For more details on these courses and to register for them, consult your preliminary program.

SATURDAY, AUGUST 26

ALAN A. BOGHOSIAN, D.D.S.

Dental Materials for
Dental Assistants

JAMES GRISDALE, D.D.S.

Root Planing and Scaling

SUNDAY, AUGUST 27

STANLEY F. MALAMED, D.D.S.

Emergency Medicine in Dentistry

JEFFREY A. SHERMAN, D.D.S.

Electrosurgery

JOHN COX, D.D.S., Dip. Pros., MSc.

Implants: Basic Prosthetic
Certification Course

(pre-requisite lecture all day Saturday)

MONDAY, AUGUST 28

ST. JOHN AMBULANCE

CPR — Basic Rescuer
Level 'C' Certification Course

DONALD ROLFS, D.D.S.

Periodontal Surgery for
the General Practitioner

TUESDAY, AUGUST 29

SALAM SAKKAL, D.M.D., M.S.

Advanced Concepts in Endodontics

CLASS REUNIONS ...

A great way to renew old acquaintances

You graduated from Dental School in 19.. and since then you haven't seen many of your classmates. True? Then, why not take the opportunity offered by the 1995 CDA Convention and organize a "Class Reunion".

If you wish to plan such an event, contact CDA Conventions at 1-800-267-6354. We will be pleased to work with you to arrange function rooms and accommodation for your group.



Travelling made easy!

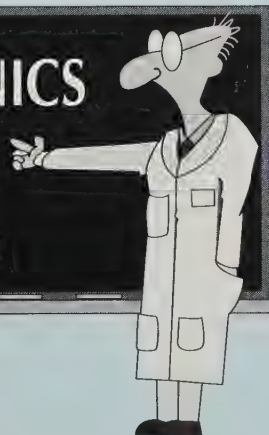
Many of you planning to attend the CDA 1995 Convention will be required to travel some distance to get here. In order to make your travel arrangements as headache free as possible, TOURCAN VACATIONS will be able to assist you with any of your flying needs. They can make arrangements from various cities throughout Canada with a final destination to Ottawa's MacDonald Cartier International Airport.

To take advantage of this service, contact TOURCAN directly at:
1-800-263-2995 or
(416) 391-0334.



TABLE CLINICS

Nuggets of Information



Have you found a different way to perform a certain procedure or a better method to use a particular product? Do you have some knowledge which you feel would benefit your colleagues in their daily practice? Then you are the perfect candidate to present a **TABLE CLINIC**.

These mini lectures last approximately 15-20 minutes and are repeated as long as there is an interested audience over the course of the afternoon. For more information on how to register to present a **TABLE CLINIC**, call CDA Conventions at 1-800-267-6354.



OTTAWA 1995
August 26 - 29

SOCIAL PROGRAM

CDA 1995 / 4 DAYS OF LEARNING 3 evenings of festivities

SUNDAY, AUGUST 27 *One Evening ... Two Great Events*

OPENING CEREMONY ...

5:00 P.M. - 7:00 P.M.

ASH TEMPLE and the CDA CONVENTION offer you an unforgettable **OPENING CEREMONY**

The prestigious National Arts Centre will open the doors of its Opera Room to all Convention participants. Join your family and friends for an evening of fun and laughter. You will be mesmerized by CIRCUS ACTS, amused by COMEDIANS, delighted by ENTERTAINERS ... and more!

All those attending the Convention are invited to register for the Opening Ceremony. Request your ticket on your enrolment form today. There are only just over 2,000 seats available, so **RESERVE NOW**.



... IMMEDIATELY FOLLOWED BY A **MEET & GREET RECEPTION!**

After the Opening Ceremony, you are invited to attend a **MEET & GREET** reception.

The fiesta continues! This evening will set the tone for the Convention: Friends meeting friends.

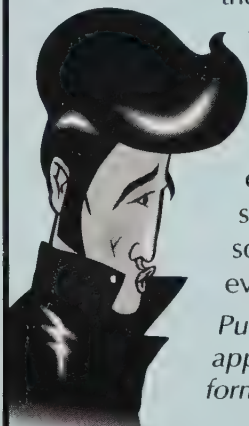
Come, enjoy a light meal and "Team up" in a carnival atmosphere. There will be clowns, magic, games and entertainment for everyone, young and old.

Select the **MEET & GREET** box in the Social Program section of the enrolment form to purchase your ticket.

MONDAY, AUGUST 28TH

ONE, TWO, THREE O'CLOCK, FOUR O'CLOCK ROCK ...

You might not "rock 'till broad daylight" but you will certainly enjoy the theme and music of this year's **PRESIDENT'S GALA!** Forget the 90's, jump back in the 50's and early 60's with the sounds of Elvis, Buddy Holly, the Platters ...



Plan to dress and look the part! Teased or greased slicked hair, poodle skirts, tight black pants, chiffon dresses, white T-shirts, high school letter sweaters and white socks are in order. This will be an evening you will remember.

Purchase your ticket by selecting the appropriate box on your enrolment form.

TUESDAY, AUGUST 29

A Wine Tasting Evening

Hosted by the Ottawa Dental Society

As the Convention winds down, you are invited once more to join your colleagues and friends in a relaxing atmosphere. You will enjoy the spirits of various regional vineyards in the magnificent setting of the National Gallery of Canada. This is a perfect time to discover new wines or rediscover older, more familiar vintages.

Purchase your ticket by selecting the appropriate section on your enrolment form.

SOCIAL PROGRAM



OTTAWA 1995
August 26 - 29

VISITS & ONE-DAY TOURS

MONDAY, AUGUST 28TH

Sights, Tastes and Culture

Start your day with a fully commentated tour of Ottawa in a double-decker bus. You will ride around the Byward Market and through the heart of the city before embarking on a loop along Sussex Drive to Rockcliffe Park, one of the most scenic drives in the area. You will follow the Rideau Canal, see the waters of Dow's Lake and ride past national embassies and heritage homes before reaching the final destination, the National Gallery of Canada. Here, you will enjoy a fabulous luncheon before your guided tour of the beautiful masterpieces housed at the National Gallery.



TUESDAY, AUGUST 29TH

A Day of Discovery in Merrickville

A comfortable motorcoach will bring you to this delightful little village of Merrickville; a site imbued with history dating back to the 1790's. Your morning will be spent with a local guide who will introduce you to the city's attractions. You will visit the Blockhouse Museum, an impressive old stone house full of artifacts from the time of the building of the Rideau Canal and locks. After an outdoor lunch (weather permitting) at a quaint old inn you can embark on an afternoon of discovery in the many craft and antique shops. You can browse through artists' studios and admire the craftsmanship displayed in the charming little boutiques.

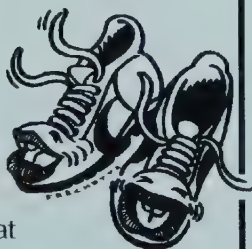
ANNUAL FUN RUN & WALK

TUESDAY, AUGUST 29TH

Come and have fun ... on the run!

Inveterate runners and casual walkers will enjoy this time of outdoor activity. Whether you choose to run 5 or 10 km or walk 5 km, you do so at your own speed. We will record your time, but most importantly, we want you to have fun.

There will be t-shirts, draws and snacks for all registered fun run participants.



GOLF
GOLF
GOLF
GOLF
GOLF
GOLF
GOLF
GOLF

\$1 MILLION HOLE-IN-ONE!

CDA 1995 Golf tournament is hosted by **Dentistry Canada Fund** and **Aurum Ceramic/Classic**. Every golfer is automatically eligible to qualify for the \$1 million dollar challenge!

The tournament will take place on Sunday, August 27 beginning at 9:30 a.m. at the Chaudière Golf Club. See your Preliminary Program for further details. Space is limited, enrolment is on a first-come, first-served basis.

CHILDREN'S PROGRAM

— Monday, August 28th —

**Museum of Science & Technology /
McDonalds / Wave Pool**



Begin the day at the Museum where exhibits and displays are designed to encourage a hands-on approach to science. Children can enjoy everything from trains to space to printing presses, from watching baby chicks being hatched to participating in EUREKA! in the interactive science hall.

After lunch at McDonald's, you're on your way to the WAVE POOL. This supervised indoor pool is great for those who love water. Waves are intermittent but the pool has calm periods for those who just like to swim.

There's not much summer fun without enjoying water!

— Tuesday, August 29th —

Museum of Civilization / Log Farm

Today's museum features a tour (especially designed for children) of various civilizations. Children can dress up in period clothing and taste ethnic food from around the world.

The afternoon will be full of surprises at the **LOG FARM**. Hop on the hay wagon, walk through the crops, play with farm animals and make ice cream and butter.

All children's outings are fully supervised and include lunch and transportation.



CANADIAN DENTAL ASSOCIATION CONVENTION

Ottawa • August 26 - 29, 1995

GST Registration Number: R106845209

ONE FORM PER PERSON

PRE-REGISTRATION & HOTEL RESERVATION FORM • Please PRINT

1. Obtain **1 FORM FOR EACH INDIVIDUAL** you would like to register.
You may photocopy the enrolment form, or you can obtain additional forms by contacting CDA Conventions at 1-800-267-6354.
2. **EACH** individual's name should be printed clearly in the appropriate section. **EACH** individual form should select a **DELEGATE TYPE** in order to register for the Convention.

Check one:	Family Name	
☐ Dr.	First Name	
☐ Mr.	Sex: ☐ M ☐ F	
☐ Ms.		
Street address		
City	Province	Postal Code
Office Telephone ()	Home Telephone ()	Fax ()
CDA Membership Number		License Number

LIMITED ATTENDANCE LECTURES

Saturday, August 26th —

Terry Donovan — Aesthetic/Restorative Dentistry — All-day lecture
Dentist \$ 135 _____
Dental Staff (non-dentist) \$ 65 _____

Sunday, August 27th —

W. Charles Blair — Achieving Financial Independence —
Half-day lecture
Dentist (7% GST included) \$ 95 _____
Spouse (7% GST included) \$ 40 _____

W. Charles Blair — Dental Practice Transition — Half-day lecture
Dentist (7% GST included) \$ 95 _____
Spouse (7% GST included) \$ 40 _____

Donald Rolfs — Periodontal Disease — All-day lecture
Dentist \$ 135 _____
Dental Hygienist \$ 65 _____

Alan Boghosian — Dental Materials — All-day lecture
Dentist \$ 135 _____
Dental Staff (non-dentist) \$ 65 _____

HANDS-ON COURSES

Saturday, August 26th —

Alan A. Boghosian — Dental Materials — Half-day hands-on course
Dental Assistant (limited to 50 participants) \$ 95 _____

James Grisdale — Scaling & Root Planing — Half-day hands-on course
Dentist / Dental Hygienist (limited to 40 participants) \$ 115 _____

John Cox — Implants
1 1/2 DAY COURSE: SATURDAY AND SUNDAY (AM)
Dentist (limited to 50 participants) \$ 295 _____

Sunday, August 27th —

Stanley Malamed — Emergency Medicine in Dentistry —
All-day hands-on course
Dentist/Staff (limited to 30 participants) \$ 295 _____

Jeffrey A. Sherman — Electrosurgery — Half-day hands-on course
Dentist (limited to 40 participants) \$ 115 _____

Monday, August 28th —

Donald Rolfs — Periodontal Surgery — All-day hands-on course
Dentist (limited to 40 participants) \$ 295 _____

St. John Ambulance — CPR — All-day hands-on
Certification course \$ 35 _____

Tuesday, August 29th —

Salam Sakkal — Advanced Endodontics — All-day hands-on course
Dentist (limited to 40 participants) \$ 195 _____

GST is included in the Limited Attendance Practice Management courses.
GST is not charged on Limited Attendance and Hands-on scientific courses.
Lunch is included in all-day Limited Attendance and Hands-on courses
(except for CPR).

CONVENTION

Choose only one delegate type. 1 registrant per form.

☐ **Dentist**
Member of CDA \$ Nil _____
Non-member of CDA (7% GST included) \$ 175 _____

☐ **Spouse** (7% GST included) \$ 98 _____

☐ **Dental Hygienist** (7% GST included) \$ 98 _____
Dental Hygienist (See note below)* \$ Nil _____

☐ **Dental Assistant** (7% GST included) \$ 98 _____
Dental Assistant (See note below)* \$ Nil _____

☐ **Office Personnel, Office Manager,
Receptionist** (7% GST included) \$ 98 _____
**Office Personnel, Office Manager,
Receptionist** (See note below)* \$ Nil _____

☐ **Dental Technician** (7% GST included) \$ 98 _____

☐ **Children (6-12 years)** Child's Age: _____
Monday program (7% GST included) \$ 48 _____
Tuesday program (7% GST included) \$ 48 _____

☐ **Student Dentist** \$ Nil _____
☐ **Student Hygienist** \$ Nil _____
☐ **Student Dental Assistant** \$ Nil _____

* Students must provide proof of full-time attendance.

***NOTE:** Every dentist enrolled for the Convention can register two (2) non-dentist staff members for the convention proper **FREE OF CHARGE**. The first or second non-dentist staff member to register *with* a dentist, choose "Registration Fees" Nil. Send Registration Form with that of the dentist.

SOCIAL EVENTS

- ☐ **Opening Ceremony** — Sunday, August 27th
(Subject to space availability — One ticket per Registration Form)
Will attend ☐ Yes ☐ No \$ Nil
- ☐ **Meet & Greet** — Sunday, August 27th
..... (7% GST included) \$ 50
- ☐ **President's Gala** — 50's Dance — Monday, August 28th
..... (7% GST included) \$ 75
- ☐ **Wine Tasting Reception** — Tuesday, August 29th
..... (7% GST included) \$ 25
- ☐ **Golf Day** — Sunday, August 27th
..... (7% GST included) \$ 98
- ☐ **Fun Run** — Tuesday, August 29th a.m.
..... (7% GST included) \$ 20
- ☐ **Visits and Tours**
Monday tour and luncheon (7% GST included) \$ 50
Tuesday tour and luncheon (7% GST included) \$ 50

TOTAL \$

Person/company
responsible for payment: _____

☐ I wish to pay the above total by credit card: ☐ MasterCard ☐ VISA

Card # _____ Expiry date _____

Name of Cardholder _____

SIGNATURE _____

☐ I enclose a cheque payable to the Canadian Dental Association.
Post-dated cheques will not be accepted.

CANCELLATION POLICY:

- Cancellation received, in writing, on or before July 21, 1995 — full refund
- Cancellation received, in writing, after July 21, 1995 — subject to a 25% administrative charge

NO REFUND AFTER AUGUST 18, 1995



INFORMATION ON REGISTRATION:

All participants registered for the Convention:

- have access to all general lectures of the Convention proper
- have access to the exhibit hall
- have access to the Opening Ceremony
- are entitled to register for the appropriate limited attendance lectures and hands-on courses
- are entitled to register for social events, visits and tours

Spouses and children have access to the Opening Ceremony only if they register for one or more of the Convention's day programs or if registered for the Convention. Spouses not registered for the Convention do not have access to the general lectures or to the exhibit hall.

To ensure that your requests are met — **please register early.** Advance registrations will be accepted until **July 21st, 1995** after which date forms will be returned to the sender. Each on-site registration will be subject to a \$30 administrative fee (GST included).

MAKING YOUR AIRLINE RESERVATIONS

Special arrangements have been made with Air Canada to offer participants discounts on airfares.

To take advantage of this service, you must call Air Canada Convention Central at **1-800-361-7585** and quote event **CV950931**.

HOTEL RESERVATION

Type of Room:

☐ Single ☐ Double ☐ Twin ☐ Other (please specify) _____

☐ Smoking ☐ Non-Smoking

Special Requests: _____

Sharing with _____

Indicate your choice of hotel* (by numbering the boxes):

- ☐ Westin Hotel (CDA Headquarters) \$128.00 single/double
- ☐ Château Laurier \$127.00 single/double
- ☐ Sheraton \$110.00 single/double
- ☐ Novotel \$99.00 single/double

* Prices do not include taxes.

Arrival Date: _____

Arrival Time: _____

Departure Date: _____

All changes and/or cancellations must be made **IN WRITING** through CDA Conventions. Fax to (613) 523-3062.

In order to reserve a room, a guarantee for the first night is essential. The guarantee will apply to the first night **ONLY**. To cancel your reservation advise CDA Conventions at least three (3) days prior to your projected arrival date.

CHEQUES WILL NOT BE ACCEPTED.

☐ MasterCard ☐ American Express ☐ VISA

Card # _____ Expiry date _____

Name of Cardholder _____

SIGNATURE _____

DEADLINE for Reservations: July 21, 1995

ACCOMMODATION

- ☐ I do not require accommodation
- ☐ Other arrangements have been made

MAIL Pre-registration and Hotel Reservation Form with payment to:

1995 CDA Convention
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

OR FAX

(if paid by credit card): (613) 523-3062

Dentists, Hygienists, Assistants, Office Personnel
& Technicians registering by July 21, 1995
will be eligible to win two tickets **anywhere**
Air Canada flies in Europe and North America!
(Some restrictions apply.)



OTTAWA 1995
August 26 - 29

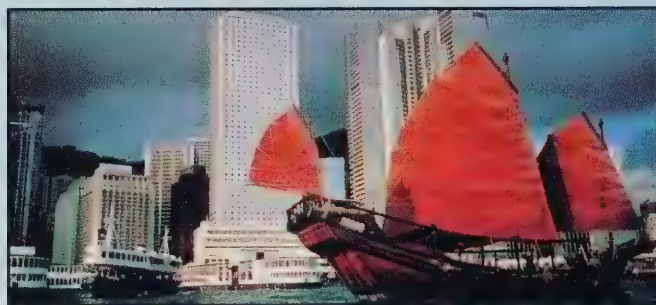
CDA 1995 OUT-OF-COUNTRY SEMINARS

FDI 1995 — HONG KONG ... where you can't stay for just one day

This year, the FDI Annual Dental Congress will take place in Hong Kong from October 23-27. Organized jointly by the Hong Kong Dental Association and the World Dental Federation, FDI 1995 is a not-to-be-missed event in the dental world. As they did in Vancouver, dental professionals from around the world will gather to learn together and in the words of Dr. Wong Tin Chun, Chair of FDI 1995, "you will have a great time if you come and regrets if you don't".

We have put together a comprehensive package which includes airfare and 5 nights accommodation (with breakfast) in some of the finest Hong Kong hotels. Get a taste of the exotic far east and attend an excellent convention.

Hong Kong's exotic location presents exciting opportunities for post-congress tours and visits. Should you wish to combine your participation in FDI 1995 with a holiday, you

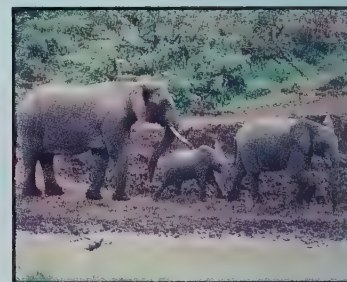


can choose from an excursion to Bali (October 26-30) a first class ride on the Orient Express that will take you from Bangkok to Singapore (October 25-28), a tour of Bangkok and Singapore (October 26-31) a twelve day visit to China (October 26 - November 6) or a deluxe motor-coach tour of the Bunga Raya – Singapore, Malaysia and Bangkok (October 26 - November 5).



GREECE — AT ITS BEST (June 17 - July 1, 1995)

Looking up at the Acropolis overlooking the city of Athens is an experience you will not soon forget. Your tour of the country, birthplace of Zeus and Homer, Athena and Ulysses, is sure to capture your imagination. You will visit the home of the Olympic torch, the museums of Corinth, Epidauros, Mycenae and Nauplia, the ancient theatre and sanctuaries of Delphi before departing the Mykonos on a splendid four-day Greek Island Cruise.



THE JEWELS OF KENYA (July 13 - 27, 1995)

Your safari begins at the Masai Mara Game Reserve, Kenya's richest reserve. Observe large free-roaming herds on the plains. At the Aberdare National Park visit The Ark, a unique lodge overlooking a large salt lick and waterhole that attracts wildlife both day and night. Enjoy the Samburu Reserve where the elephant, buffalo, cheetah, lion and leopard roam uninhibited. Be entertained by mischievous monkeys and watch sleeping crocodiles sun themselves at the river's edge.

Are you ready for something more than just another holiday?

Then, CDA Out-of-Country seminars will provide you with an opportunity to meet your peers in different parts of the world, visit dental clinics and private practices, attend seminars and interact with members of the national dental association. And yes, above all, you will also visit exotic places and discover wonderful sites. (Tours described above are only highlights).

**For more information, contact Tourcan at 1-800-263-2995
or CDA Conventions at 1-800-267-6354.**



Dental Amalgam: Scientific Consensus and CDA Policy

Brian Henderson, BA, M.Ed.

It is an undisputed fact that a number of researchers have demonstrated that the mercury vapor released from dental amalgam by chewing may contribute to the mercury burden of the human body. Despite this finding, the use of dental amalgam continues to be supported by the dental profession worldwide, and it remains the restorative material of choice in many dental applications.

The purpose of this paper is to review, in lay person's terms, the development of the Canadian Dental Association's policy statements on dental amalgam against the background of continuing scientific studies. (The *Journal* published a review of the major scientific studies on amalgam in February 1993: Jones, D.W. The Enigma Of Amalgam in Dentistry. *J Can Dent Assoc* 59(2):155-166, 1993.)

In Canada, the primary responsibility for ensuring the safety of medical devices and materials, including dental amalgam, rests with the federal government. This role has been mandated to the Health Protection Branch of Health Canada, which is also responsible for regulating the marketing and sale of medical devices and materials.

Since health and education are both identified by the constitution as being provincial responsibilities, in actual fact the authority and responsibility for sanctioning specific procedures rests with the provincial dental licensing bodies. Provincial licensing authorities

often rely on their national associations for guidance, however. And national professional associations, such as CDA, rely on the validity of federal regulatory and approval processes as a basis for formulating their related policies.

In these circumstances, national professional associations carry a heavy responsibility. They need to be assured that the regulatory process of the federal government is based on sound information and research, and that their own association policies both respect the regulatory process and are consistent with the current scientific consensus. CDA has attempted to meet this responsibility fully in establishing its policies and positions related to dental amalgam.

Dental amalgam is approved by the Health Protection Branch for sale and use in Canada. While this indicates that the federal government continues to view dental amalgam as a safe and efficacious restorative material, CDA does not base its policies and guidelines solely on federal approval. Through its committee on dental materials and devices, the association also monitors scientific studies on topics such as dental amalgam.

In fact, the committee became aware, more than 10 years ago, that new measuring devices were capable of detecting the most minute amounts of mercury vapor. Using these devices, researchers ultimately determined that chewing causes the release of mercury va-

por from dental amalgam restorations. The committee reviewed various studies demonstrating this action, but was unable to locate any studies suggesting that the release of mercury vapor posed any health hazards to dental patients.

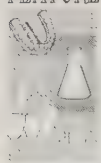
Subsequent studies appeared to confirm body uptake of the mercury released from dental amalgam, but once again did not confirm any harmful effects. The committee was keenly aware that the human body's mercury burden is derived from a number of sources, that various forms of mercury are involved in this process, and that the amount of mercury that could realistically be taken up from amalgam was less than the amount that could potentially be taken up from natural sources. The committee's review is reflected in the CDA policy position of 1986, which states:

"Current research on the use of silver dental amalgam suggests that amalgam continues to demonstrate clear advantages in many applications over other restorative materials. Significant evidence of patient risk associated with its use has not been demonstrated. Most therapeutic materials involve potential side effects or risks as well as benefits, and dentists are trained to be on their guard for these reactions at all times."

Since 1986, even in the face of intense media pressure, the committee has advised CDA to maintain its position on dental amal-

JOURNAL

May/
May
1995
Vol. 61
No. 5



gam. In effect, based on its ongoing review of the literature, the committee is still of the opinion that there is no scientific basis for CDA to modify its current amalgam policy.

The ultimate authority for setting CDA policy on dental amalgam lies with the association's board of governors. To fulfil this role effectively, the board relies on the ability of the committee on dental materials and devices to monitor and review the scientific literature on the subject of dental amalgam. The committee, in turn, keeps the board informed of the latest developments and identifies areas of concern. This requires the committee to be fully aware of the scientific consensus on dental amalgam safety at any given time. It's an unenviable task, at best.

The scientific consensus on any issue is derived from the weight of scientific evidence supporting a particular hypothesis. There is considerable difference between the findings of one or two studies, and their replication by several different researchers employing the same and other methodologies. But it is common, rather than uncommon, to find some studies supporting a particular hypothesis, and some studies suggesting its rejection. Over time, however, conclusions tend to be confirmed by multiple studies with the same findings. The dilemma is well illustrated in the following quote from the *British Dental Association Journal*:¹

"The word science comes from the Latin *sciens*, which means knowing (not knowledge) and thus should be considered a process rather than a product. Scientific method relies on three aspects being present in this process, observation (gathering data), formulating hypotheses (making informed guesses about the data) and testing them, then developing theory (the explanation of similar sets of observation and events) . . .

"The current hypothesis is that mercury in dental amalgam is not a cause of any systemic disease or illness when used as dental restorations, apart from the very few cases of direct sensitivity. No evidence exists which requires us to reject this hypothesis, so the view

remains consistent worldwide in the scientific community."

Scientific consensus is not readily reported by the media. Both print and television news producers are tremendously fond of sensational stories that build audiences, because audience size is important to advertising revenue. Consequently, the media's treatment of issues such as dental amalgam safety may not be fair, objective or comprehensive. The story *60 Minutes* broadcast on dental amalgam in the United States in December 1990, and the recent BBC *Panorama* broadcast of "Poison in the Mouth" in Great Britain (see *Communiqué*, Jan.-Feb.:10-11, 1995), are excellent examples of the trend toward bombastic reporting.

Unfortunately, the scientific community has also played a role in the dissemination of one-sided and incomplete information in recent years. It is becoming more common for researchers, hungry for recognition and grant money, to release their results to the popular media prior to their publication in professional journals. CDA, provincial dental associations and the licensing authorities have worked hard, using communications vehicles such as the CDA President's Letter, to respond effectively to such events.

Ironically, the media's coverage of the dental amalgam issue has occasionally inferred (as in the case with the BBC *Panorama* program) that dentistry has a self-interest in defending dental amalgam "in the face of proven dangers." This inference of self-interest is even evident in a letter from the Ontario Minister of Health, Ruth Grier, to the Royal College of Dentists of Ontario. The minister, referring to a *Saturday Night* magazine article written by Morris Wolfe,² stated:

"The article goes so far as to suggest the possibility that the profession is avoiding the reality of the issue because of concerns about insurance and liability. If these suggestions are even partially true, then any dentist involved would clearly be putting their self-interests before the public-interest. I am sure you agree that this would be totally unacceptable."

In fact, the profession has made it clear, with some reservations, that a ban on dental amalgam would actually be in dentistry's economic interest. If a ban went into effect, in all likelihood dentists would be inundated with patients seeking to have their amalgam restorations removed.

Throughout the controversy, CDA's concern has been to ensure that dental amalgam continues to be available as a cost-effective dental material unless there are solid and substantiated reasons why it should not be used.

Most dentists still prefer amalgam for Class II restorations because it is strong, durable, and easy to use. Gold, porcelain and ceramic are sometimes used as alternative restorative materials. In addition, resin-based composite materials have been available for about 40 years. While resin-composites are used more frequently than other amalgam substitutes, product changes, introductions and withdrawals have made it difficult for the majority of dentists to feel comfortable using these technique-sensitive materials. Composites have been improving, however. With dental amalgam receiving more and more adverse publicity, and increased consumer interest in the cosmetic characteristics of other materials, composites are being used more frequently in Class II restorations.

CDA, on the advice of the committee on dental materials and devices, has pressed the federal government to fund further research that might contribute to more definitive conclusions about dental amalgam safety. To date no action has been taken. Instead, the federal government (possibly inspired by a critical letter from Ms. Grier to her counterpart in Ottawa, Health Minister Diane Marleau) has employed a researcher to put together a review of existing studies and data on dental amalgam.

It appears that the researcher is attempting to define the average mercury "body burden." Body burden would include the body's uptake of mercury from all sources, and questions on the minute contribution of dental amalgam in this regard would not be critical. The body burden figures could be compared



Canadian Dental Association

Current research on the use of silver dental amalgam suggests that amalgam continues to demonstrate clear advantages in many applications over other restorative materials. Significant evidence of patient risk associated with its use has not been demonstrated. Most therapeutic materials involve potential side effects or risks as well as benefits and dentists are trained to be on their guard for these reactions at all times.

American Dental Association

Based on the research and epidemiological evidence available to date, the ADA continues to support dental amalgam as a safe and effective restorative material and sees no cause for public concern about either existing or future amalgam restorations.

Fédération Dentaire Internationale

Dental amalgam is the most frequently used material for restoring decayed teeth. Its main advantages include wide indications for use, ease of handling and excellent physical properties. It has been used in dentistry with good results for more than a century. The quality of dental amalgam has been improved during the last 20 years. Amalgam restorations are safe and cost-effective, but they are not tooth colored.

Fig. 1: Policy statements for the use of amalgam in dentistry.

with a threshold at which there are known harmful effects, and there might be an attempt to justify restrictions on amalgam use as contributing to an overall burden approaching such a threshold. CDA's committee on dental materials and devices awaits release of the federal government's review study with interest. It is hard to regard a review of this type, however, as equivalent to the specific in-depth research that CDA has requested the federal government to fund. Such in-depth research would certainly assist the development of truly credible policy at the federal level.

There is no doubt concerning the need for in-depth research. Scientists have known for some time that mercury crosses the placenta, and in recent years studies have been raising questions about the use of amalgam in women of childbearing age. For example, a recent European study³ demonstrated a correlation between the number of maternal amalgam restorations and the level of mercury found in newborns.

CDA's committee on dental materials and devices is continuing to monitor the scientific literature, and still views dental amalgam to be a safe, efficacious restorative material. However, some dentists feel that CDA's amalgam policy should reflect the fact that such questions are being raised, even if the dangers are unproven. Dr. Bryn Sigfstead's recent President's Letter on dental amalgam responded to this concern by stressing the importance of obtaining informed patient consent prior to placing amalgam restorations. This letter was sent to all CDA

members October 31, 1994, along with a package of resource materials on amalgam.

In short, CDA's policies, positions, and resources reflect dentistry's continuing support for the use of dental amalgam as a restorative material. At the same time, however, CDA is emphasizing the importance of informed patient consent. Our policies are closely comparable with those of the American Dental Association, other national dental associations and the Fédération Dentaire Internationale (Fig. 1).

The use of dental amalgam is also being studied in terms of environmental concerns. For example, some people are beginning to question the impact that mercury-contaminated waste water, released from a dental practice, could have on the environment. Dental manufacturers have assured the committee that the modern O-ring design used in today's equipment traps waste amalgam, even without the addition of an amalgam separator. However, the extent to which soluble mercury may escape is still unknown, despite ongoing studies.

Given the questions that continue to be raised about dental amalgam and the environment, a safe, efficacious, mercury-free amalgam would be readily accepted by the profession. At least one company is believed to have this type of material under development, and it could be on the market in as little as two or three years. The other alternative may be an increased use of composites, which offer cost effective and durable restorations in many applications. New composite products are continuously being offered.

The question is, are there really any dental materials — subjected to the same scientific scrutiny as dental amalgam — which can be proven to be entirely inert? In the case of composites, for example, it is interesting to speculate what researchers might find if they were to look for the release of formalin. The simple fact is that any therapeutic intervention in the human body, employing any material, is invasive and unnatural, and carries some degree of risk. The real problem faced by our contemporary society is the need to recognize this fact, and the degrees of risk, practicality, availability and cost-effectiveness of the range of available options. Such a systematic and comprehensive review of the available options is not being provided, either by government or independent researchers. In this context, an increased emphasis on informed consent is good advice for the dental profession to follow, whether the procedure involves dental amalgam or any other restorative material. ■

Brian Henderson is CDA's director of education, accreditation and professional services, and is the senior staff representative to the committee on dental materials and devices.

References

1. Eley, B.M. and Cox, S.W. The Release, Absorption and Possible Health Effects of Mercury From Dental Amalgam: A Review of Recent Findings. *Br Dent J* November 1993, pp. 353-362.
2. Wolfe, M. Dental Flaws. *Sat Night* November, 1993.
3. Drasch, G., Schupp, I., Holf H. et al. Mercury Burden of Human Fetal and Infant Tissues. *Euro J Pediatrics*, Spring 1994, pp. 607-610.

CLINICAL



Papillon-Lefèvre Syndrome Associated Early Onset Periodontitis: A Review and Case Study

David French, B.Sc., DDS

Helen Scott, B.Sc., DDS, M.Sc., MRCD(C)

Christopher M. Overall, BDS, B.Sc.Dent., MDS, PhD

ABSTRACT

A case of Papillon-Lefèvre syndrome that has been managed successfully for six years is reported. Papillon-Lefèvre syndrome is a rare form of early onset periodontitis that occurs at a rate of 1-3 per million. Diagnostic features include palmar-plantar hyperkeratosis and rapid periodontal destruction. Although the etiology of this syndrome is unknown, current theories on the nature of the underlying defect fall into three main categories: anatomical, bacterial and host response. Historically, Papillon-Lefèvre syndrome was thought to lead to the inevitable loss of both the primary and permanent dentitions. However, a recently proposed treatment involving antibiotic coverage, extraction of the primary dentition and a period of edentulism has been shown to be effective in maintaining the permanent dentition. Since treatment may begin prior to the eruption of the permanent dentition, early recognition of Papillon-Lefèvre syndrome is critical. Any young patient who exhibits palmar hyperkeratosis should be examined carefully for periodontal breakdown. Since the number of cases available for study is limited, referral of such individuals to University dental clinics may allow for a more specific analysis of immune or bacterial factors that may lead to a better understanding of this disease.

SOMMAIRE

Voici un cas de syndrome Papillon-Lefèvre qui, durant six ans, a été géré avec succès. Le syndrome Papillon-Lefèvre est une forme rare d'attaque précoce de la périodontite qui se produit à un taux de 1-3 par million. Les signes diagnostiques comprennent une hyperkératose palmo-plantaire et une dégradation rapide du parodonte. Bien que l'étiologie de ce syndrome soit inconnue, les théories actuelles touchant les causes profondes du mal sont réparties en trois catégories: anatomique, bactérienne et réactive. Historiquement, on croyait que le syndrome Papillon-Lefèvre entraînait inévitablement la perte des dents temporaires et permanentes. Toutefois, on vient de proposer un traitement qui comprend l'administration d'un antibiotique, l'extraction des dents temporaires et une période d'édentation, traitement qui s'est révélé efficace pour conserver la denture permanente. Comme le traitement peut débuter avant l'éruption des dents permanentes, il est extrêmement important de diagnostiquer le syndrome Papillon-Lefèvre tôt. Aussi tout jeune patient affligé d'une hyperkératose palmaire doit-il faire l'objet d'un examen soigné afin de voir si son parodonte ne présente pas des signes de dégradation. Comme le nombre des cas disponibles pour des fins d'étude est restreint, le renvoi des sujets atteints à des spécialistes

pourrait permettre une analyse plus précise des facteurs immuns et bactériens.

Introduction

Papillon-Lefèvre syndrome is a rare but serious disease that may manifest as a form of early onset periodontitis. Although it has historically caused the premature loss of all primary and permanent teeth, recent reports indicate that the syndrome is manageable and that permanent teeth may be saved. However, early case recognition is important. To facilitate early diagnosis in clinical dental practice, this paper will review pertinent information regarding the onset and clinical signs of Papillon-Lefèvre syndrome, and outline potential etiologies and treatment modalities. A case that has been managed successfully for over six years, with no loss of the patient's permanent dentition, is reported.

Diagnostic Features

Papillon-Lefèvre syndrome is an autosomal recessive trait that features palmar-plantar hyperkeratosis and premature loss of the primary and permanent dentition.¹ It occurs at a rate of 1-3 per million in the general population, but is more frequent in consanguineous offspring.² Patients with the syndrome exhibit normal primary dentition eruption patterns, but the primary teeth develop an ad-



Fig. 1: Palmar hyperkeratosis, as seen at age nine, was easily recognizable, but milder presentations are not uncommon.



Fig. 2: Panel A shows the clinical presentation of the patient at age three. The attachment loss on teeth 51 and 61 is evident, as is the abundant plaque at the gingival margins. Panel B shows the clinical presentation of the same area after only three months. Despite conventional periodontal therapy the attachment loss progressed rapidly.



Table I

Features Of Papillon-Lefèvre Syndrome

prepubescent periodontitis
keratodermopathy
dural calcifications
susceptibility to infection (15% - 25% of cases)
familial tendency (autosomal recessive inheritance)

Table II

Theories On the Etiology Of Papillon-Lefèvre Syndrome:

Anatomical	Host Response	Pathogens
Cemental defect	Impaired PMN phagocytosis and chemotaxis	Presence of <i>Actinobacillus actinomycetemcomitans</i>
Epithelial defect	Reduced Fc receptor mediated phagocytosis	Other suspected pathogens, i.e.; <i>Porphyromonas gingivalis</i>
Periodontal ligament defect		



Fig. 3: Panoramic radiograph image of the patient's alveolar bone loss in primary molars. Primary teeth often exfoliate with roots fully formed, due to the rapid attachment loss.

vanced and rapidly destructive periodontitis that ultimately causes their loss, usually in the order of eruption.³ The onset of periodontal symptoms generally occurs after three years of age, but dental involvement can begin as early as 18 months. Mild variations have also been documented where the onset of periodontal involvement occurs as late as the second decade.^{4, 5} However, the diagnosis of Papillon-Lefèvre syndrome in these late onset cases has been questioned.³

The diagnosis of Papillon-Lefèvre syndrome is based on a pedigree of autosomal recessive inheritance and on the clinical findings

of dermatologic and periodontal involvement.^{1, 3} Clinically, this periodontitis presents as severe gingival inflammation, bleeding margins, and rapid probing attachment loss.³ Interproximal angular defects and furcation radiolucency in the primary and mixed dentition may be present on radiographic examination. Other features include ectopic calcification of the dura and increased susceptibility to infection. However, calcifications in the dura are variable findings and their significance is unknown.³ Increased susceptibility to infection is found in 15 to 25 per cent of reported cases, and

typically presents as pyoderma and boils.⁶⁻⁸ The life span of a patient affected with Papillon-Lefèvre syndrome is normal, except in some cases of severe susceptibility to infection.⁷ Retardation in mental or somatic development has also been described, but only as an uncommon finding (Table I).²

Other syndromes, such as Unna Thost and Melada's disease, which also exhibit hyperkeratosis but do not cause periodontal destruction, must be considered in the differential diagnosis of Papillon-Lefèvre syndrome.³ Further, this syndrome is only one cause of periodontitis in prepubescent children.^{8, 10} The differential diagnosis for periodontal disease in the primary dentition also includes Chediak-Higashi, Histiocytosis X, cyclic neutropenia, leukemia, hypophosphatasia, acrodynia, and localized or generalized prepubertal periodontitis. Notably, the localized form of prepubertal periodontitis exists in otherwise healthy prepubescent children, and thus can be differentiated from Papillon-Le-

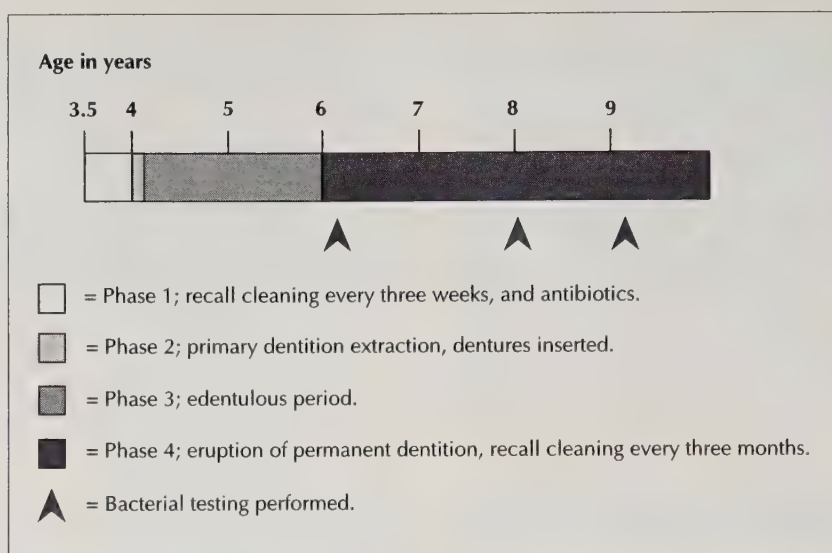


Fig. 4: Case history, presentation and maintenance.



Fig. 5: The child-sized dentures worn by the patient during the two-year edentulous period.

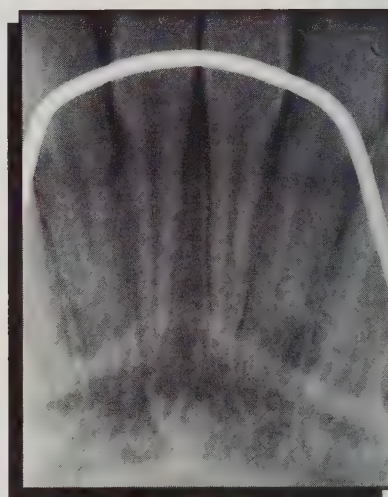
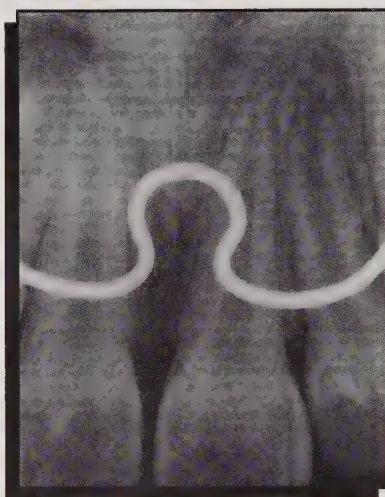


Fig 6: Panel A, clinical anterior view of the permanent dentition at age nine. Panel B, periapical radiograph of the upper anterior. Panel C, periapical view of the lower anteriors. No clinical or radiographic evidence of periodontal disease was noted at this time.



Fig. 7: Panel A, lingual view of tooth 36 at age nine with a holding arch in place. There is gingivitis associated with plaque accumulations around the molar band. No attachment loss had been detected clinically. Panel B, bite-wing radiograph of tooth 36 at age nine. The presence of an intact alveolar crest adjacent to the CEJ (arrows) supported the clinical finding that no attachment loss had occurred. Of note, difficulties were encountered attempting periapical views in the posterior region.

count, neutrophil function tests, and alkaline phosphatase levels, are useful to rule these out.¹⁰

In Papillon-Lefèvre syndrome patients, systemic blood levels for parathyroid hormone, alkaline phosphatase, Vitamin A and β -carotene have generally been normal,^{1,9} and no distinct laboratory findings are available that can provide a definitive diagnosis.² However, since this syndrome is rare, it is beneficial to have laboratory data on every case. Analysis of neutrophil function, lymphocyte reactivity, and a bacterial profile may be useful in the study of the etiology and progression of the syndrome.

Etiology

Papillon-Lefèvre syndrome typically involves tissue from three

fèvre syndrome. The generalized form of prepubertal periodontitis is an expression of leukocyte adhesion deficiency, which is not present in Papillon-Lefèvre syn-

drome.^{8, 10} Although these other forms of childhood periodontal disease do not typically present with dermal hyperkeratosis, blood studies, including a differential

sites: periodontium, dermis and dura, but the underlying defect in each site is unknown. Theories on the etiology of the Papillon-Lefèvre syndrome periodontal lesion fall into three main categories: anatomical, bacterial and host response (Table II).

Anatomical Differences

Anatomical defects involving either cementum, periodontal ligament or epithelial attachment have been speculated to predispose patients to destructive attachment loss. Smith and Rosenzweig¹¹ and Vrahopoulou et al¹² reported reduced cemental thickness in Papillon-Lefèvre syndrome cases. Of note, cemental deformities are also associated with other aggressive forms of periodontitis, such as juvenile periodontitis and rapidly progressive periodontitis.¹² Defects in the formation of the periodontal ligament were also noted in a recent SEM and TEM study where the periodontal ligament was extensively degenerated beyond the depth of the periodontal pocket.¹² However, it was not possible to determine if the degeneration seen in the periodontium preceded the inflammation or resulted from it. In Papillon-Lefèvre patients, the epithelium lining the periodontal sulcus is thin and ulcerated. Although epithelial defects have been proposed as an etiologic factor by several authors,^{13, 14} this has not been supported by others.¹⁵

Bacterial Profile

Several putative pathogenic organisms are frequently associated with Papillon-Lefèvre syndrome: *Actinobacillus actinomycetemcomitans*, *Capnocytophaga*, *Porphyromonas gingivalis* and *Wolinella recta*.^{9, 16-18} In addition, large numbers of spirochetes have been found at the apical border of subgingival plaque in Papillon-Lefèvre syndrome patients.¹⁹⁻²¹ Leukotoxin-producing bacteria are thought to play a role in creating the frequently reported finding of a sub-sulcular epithelial zone that is free of polymorphonuclear leukocytes.¹ Although no single species or bacterium has been consistently associated with Papillon-Lefèvre syndrome cases, *Actinomyces*

actinomycetemcomitans has been found in the majority of studies that incorporated a test for this species.^{16, 18, 22, 23} Based on a two-sibling case study, Preus et al²² have suggested that the transition from commensal *Actinobacillus actinomycetemcomitans* colonization without evidence of disease to an aggressive infection with tissue destruction was associated with an infection of the bacteria by a bacteriophage. Indeed, Preus and his associates²² questioned whether Papillon-Lefèvre syndrome was unique from other hyperkeratotic syndromes, and suggested that the periodontal symptoms represent an *Actinobacillus actinomycetemcomitans* infection superimposed on other dermal conditions, like Unna Thost or mal de Melada.

Immune Alteration

The patient's host response has been studied by numerous authors, but no significant *in vivo* humoral or cellular deficiency has been clearly identified that adequately explains the extensive periodontal destruction.¹ Despite the antigenic load typically found with periodontopathic bacteria, there is an absence of activated lymphocytes in systemic circulation. Indeed, a decreased T-lymphocyte count with a reversed ratio of T-helper to T-killer cells was demonstrated in the peripheral blood of one Papillon-Lefèvre syndrome patient.²⁴ This patient's non-affected siblings also demonstrated a reduced T-lymphocyte count, but had normal T-lymphocyte ratios.²⁴ This T-lymphocyte difference has not been found by all authors.¹ Histologic examination of the gingival lesion reveals that Papillon-Lefèvre syndrome, like juvenile periodontitis and rapidly progressive periodontitis, presents locally as an IgG-bearing plasma cell-dominated lesion with participation from T-lymphocytes.^{1, 12, 15} Similarly, juvenile periodontitis and Papillon-Lefèvre syndrome also feature an increased number of natural killer cells.¹

A compromised immune response may be a factor in Papillon-Lefèvre syndrome.^{1, 3} *In vitro* lymphocyte reactivity to the mito-

gens Concanavalin A, phytohemagglutinin, and protein A has been shown to be significantly impaired in Papillon-Lefèvre syndrome subjects compared to healthy controls. Interestingly, impaired lymphocyte reactivity has also been found in healthy siblings and parents of Papillon-Lefèvre syndrome patients, indicating a possible underlying inherited genetic defect.^{3, 11} Although impaired neutrophil chemotaxis has been found in the majority of studies,^{22, 25, 26} normal chemotaxis was reported by Lyberg¹⁴ and Schroeder.¹³ In the case studied by Schroeder, however, the primary dentition was unaffected, so it may not have represented a typical Papillon-Lefèvre case.

Normal neutrophil chemotaxis in combination with deficient Fc receptor-mediated phagocytosis has been described, with an intriguing return to normal values of receptor-mediated phagocytosis after the putative pathogen *Actinobacillus actinomycetemcomitans* was eliminated.⁹ Following periodontal treatment, a return to normal neutrophil function has been demonstrated by several authors,^{5, 17} leading to the suggestion that the *in vitro* neutrophil deficiencies observed with Papillon-Lefèvre syndrome are a result of the disease rather than the cause.^{5, 9} The limited number of case studies and the variability of laboratory procedures in each case make it difficult to determine whether there is a significant defect in host response. Most likely, a complex interaction between bacterial antigens, bacterial invasion, and the host mediators of inflammation results in initiations and progression of severe periodontitis at an early age.¹

Treatment

Historically, Papillon-Lefèvre syndrome was thought to lead to a complete and inevitable loss of both the primary and secondary dentitions, although attempts were made to arrest the disease through exhaustive periodontal treatments that included both debridement and antibiotics.^{20, 24} Ultimately, the "untreatable" nature of this syndrome led some clinicians to propose radical treatment such as vi-

tal root submersion in an attempt to maintain alveolar height for full dentures.²⁴

The dogma that Papillon-Lefèvre syndrome was untreatable was challenged by McDonald and Baer,²⁷ who reported on a case involving the full extraction of the primary dentition, followed by a period of edentulousness and, finally, antibiotic administration during the eruption of the permanent dentition. This case was followed for 12 years, during which time the permanent dentition was healthy. The authors speculated that the changes brought about in the bacterial flora due to the combination of antibiotic coverage and the period of edentulousness were sufficient to eliminate the pathogenic organisms causing periodontal destruction. This concept is further supported by anecdotal case reports of Papillon-Lefèvre syndrome in which the third molars erupted after a period of edentulousness and remained free of periodontal disease.² However, an alternative explanation may be that the host immune system had developed an appropriate response that protected the permanent dentition.

McDonald and Baer²⁷ proposed the following treatment guidelines:

1. Extraction of all primary teeth by age three;
2. Construction of complete dentures three months after removal of primary teeth;
3. Therapeutic doses of tetracycline for 10 days immediately after denture insertion; and
4. Adjustment of the denture base to allow for the emergence of the first permanent molars and incisors, followed by another therapeutic dose of tetracycline.

Several other authors have reported success following a similar treatment plan.^{17, 21} Indeed, when the patient can be seen prior to the eruption of the permanent dentition, this may be the treatment of choice in Papillon-Lefèvre syndrome cases. However, selecting the ideal treatment is not as clear cut when the patient is first seen in the mixed dentition stage or later.

In these cases treatment may include extraction of all erupted teeth followed by a period of antibiotic coverage,¹⁷ or extraction of only the affected teeth combined with periodontal therapy on the remaining unaffected teeth and antibiotic coverage.¹⁶

The antibiotic used in most described cases has been tetracycline or an equivalent product, such as Doxycycline. This selection is based on the assumption that *Actinobacillus actinomycetemcomitans* is the infecting pathogenic micro-organism.²⁸ However, *Actinobacillus actinomycetemcomitans* has not been demonstrated in every case of Papillon-Lefèvre syndrome manifesting periodontal disease, so bacterial culture and antibiotic sensitivity testing may be indicated.¹⁶

Other antibiotics have also been proposed and used in treating this syndrome. Amoxicillin and Clavulanic acid were administered in one case.¹⁶ This combination was chosen because of its increased efficacy against *Actinobacillus actinomycetemcomitans* and other gram negative anaerobes, as compared to tetracycline. Similarly, Metronidazole has been found to be more effective *in vivo* than tetracycline in the treatment of *Actinobacillus actinomycetemcomitans*-related juvenile periodontitis.²⁹

Treatment with retinoic acid (vitamin A) has been reported to improve the dermatologic condition.^{7, 30, 31} As well as reduced pyoderma, Nazzarro and coworkers³² reported that the teeth that erupted during retinoid therapy were free from periodontopathy. In theory, the efficacy of treatment with retinoic acid may be partially explained by the high concentration of retinoic acid receptors found on the cells of the periodontal ligament,³³ and by the indirect repression of collagenase synthesis by retinoic acid.³⁴ However, controlled studies on the success of retinoids in the treatment of periodontal lesions have not been reported.

Despite the successful retention of the permanent dentition described in the case studies cited,

no cases have been followed up beyond the second decade.⁹ Whether the permanent dentition is susceptible to later involvement with rapid periodontal destruction is not known. If the etiology is related to an immune dysfunction or anatomical variation, or both, a higher susceptibility for future attachment loss is possible. These patients may therefore be at increased risk for later periodontal disease and should be monitored accordingly.

Case Report

A 3.5-year-old patient (MR) was referred to the graduate periodontics clinic at the University of British Columbia by his general dentist in October 1986. The clinical signs were those normally seen in Papillon-Lefèvre syndrome, including palmar hyperkeratosis, severe gingival erythema, bleeding, and severe attachment loss (Figs, 1, 2 and 3). Between October 1986 and July 1987, the patient received professional cleaning every three weeks (Fig. 4). The patient's parents were educated on the severity of his periodontal condition, as well as on oral hygiene techniques and diet analysis. A 0.12 per cent chlorhexidine rinse for use at home was prescribed on a continuous basis over that 10-month period. Metronidazole 250 mg bid was also given for seven days in December 1986.

Despite this aggressive therapy, the periodontal destruction continued with signs of purulence, spontaneous bleeding and rapid attachment loss. Teeth 51 and 61 had exfoliated by March 1987. In April 1987, a second identical course of Metronidazole was prescribed, but no resolution in the periodontal condition was achieved.

An alternative treatment was advocated to the patient's parents at this time, involving complete extraction of the primary dentition followed by a period of edentulism. The parents consented, and on August 19, 1987, at age four, the patient's remaining primary dentition was extracted under general anesthetic. During the two-year edentulous period that followed, he wore complete dentures and his oral condition was fol-

lowed at the Shaughnessy Childrens' Hospital (Fig. 5). Eruption of the permanent teeth began in September 1989 and the dentures were removed. Bacteriologic sampling was performed when the first molars had erupted. Light microscopy revealed a predominance of non-motile rods, and bacterial culturing was negative for black pigmented *Bacteroides*, *Porphyromonas gingivalis* and *Actinobacillus actinomycetemcomitans*. During this period of permanent tooth eruption, recall cleanings were attempted every three months. However, this was not possible between November 1989 and March 1990 when the patient was out of the country, during which time he received no dental treatment.

When the patient returned to Canada in March 1990, teeth 31, 41 and all first molars were erupted. His periodontal condition revealed no evidence of attachment loss, but gingival bleeding on probing was present. To maintain space, molar bands were placed and both upper and lower lingual holding arches were constructed. Recall cleanings were again attempted on a three-month basis. Only moderate compliance to oral hygiene was noted and 0.12 per cent chlorhexidine rinses at home were given frequently. Due to concern over gingival bleeding, partly exacerbated by the molar bands, bacteriologic sampling of sub-gingival plaque was done on the mesial aspects of teeth 36 and 46 in September 1991. The samples were sent for DNA probe analysis. The results showed a weak signal for *Porphyromonas gingivalis* and a strong signal for *Bacteroides forsythus*. Recent antigen tagged antibody tests using visual scoring (Evalsite) were performed for *Actinobacillus actinomycetemcomitans*, *Prevotella intermedia* and *Porphyromonas gingivalis*. None of these three potential periodontal pathogens was found. On examination in January 1994 (at age nine years), teeth 11, 16, 21, 22, 26, 31, 32, 33, 36, 41, 42, 43, 46 were present. All teeth were caries free (Fig. 6). The holding arches were still in place. The gingiva was inflamed, bled easily and was hy-

pertrophic, particularly around the molar bands. There has been no clinical or radiographic evidence of attachment loss in the permanent dentition (Fig. 7). Rather, the appearance is that of chronic gingivitis related to inadequate oral hygiene and the sub-gingival margins of the molar bands.

Summary

Papillon-Lefèvre syndrome is a rare but treatable form of early onset periodontitis. Recognition of the syndrome while the patient is in the primary dentition stage is critical for maintaining the entire permanent dentition. Any young individual presenting to the dentist with palmar hyperkeratosis should be examined carefully and followed frequently for signs of periodontal breakdown. Parents should be counselled on the need for good oral hygiene, as well as on the likely need for early periodontal treatment, which may include extraction of the primary dentition. Since the number of cases available for study is limited, such individuals should be referred for specialist care, to university clinics if possible, which may allow more specific testing such as immune function tests or bacterial analysis. The patient presented will continue to be followed at the University of British Columbia Graduate Periodontics Clinic with regular recall cleanings, observation and treatments as required to maintain his permanent dentition. ■

Dr. French is a specialist in periodontics. He is in practice in Calgary, Alberta.

Dr. Scott is assistant professor, department of clinical dental sciences, and associate member of the department of biochemistry and molecular biology, Faculty of Medicine, University of British Columbia, Vancouver, B.C.

Dr. Overall is associate professor, department of clinical dental sciences, University of British Columbia, Vancouver, B.C.

Reprint requests to: Dr. C.M. Overall, Department of Clinical Dental Sciences, University of British Columbia, 2199 Wesbrook Mall, Vancouver, BC V6T 1Z3.

References

1. Celenligil, H. et al. Papillon-Lefèvre syndrome. Characterization of peripheral blood and gingival lymphocytes with monoclonal antibodies. *J Clin Periodontol* 19:392-397, 1992.
2. Goodman, R.M. and Gorlin, R.J. *The Malformed Infant and Child*. New York, Oxford University Press, 1983.
3. Haneke, E. The Papillon-Lefèvre syndrome: keratosis palmoplantaris with periodontopathy. Report of a case and review of the cases in the literature. *Human Genetics* 51:1-35, 1979.
4. Brown, R.S. et al. A possible late onset variation of Papillon-Lefèvre syndrome: Report of 3 cases. *J Periodontol* 64:379-386, 1993.
5. Bullon, P. et al. Late onset Papillon-Lefèvre syndrome? *J Clin Periodontol* 20:662-667, 1993.
6. Haneke, E. et al. Increased susceptibility to infections in a case of Papillon-Lefèvre syndrome. *Dermatologica* 170:27-30, 1985.
7. Bravo-Piris, J. et al. Papillon-Lefèvre syndrome. Report of a case treated with oral retinoid RO-10-9359. *Dermatologica* 166:97-103, 1983.
8. Levo, Y. et al. Immunological study of patients with the Papillon-Lefèvre syndrome. *Clin Exp Immunol* 40:407-410, 1980.
9. Preus, H. and Gjermo, P. Clinical management of prepubertal periodontitis in two siblings with Papillon-Lefèvre syndrome. *J Clin Periodontol* 14:156-160, 1987.
10. Watanabe, K. Prepubertal periodontitis: a review of diagnostic criteria, pathogenesis, and differential diagnosis. *J Periodont Res* 25:31-48, 1990.
11. Smith, P. and Rosenzweig, K.A. Seven cases of Papillon-Lefèvre syndrome. *Periodontics* 5:42-46, 1967.
12. Vrahopoulos, T.P. et al. Ultrastructure of the periodontal lesion in a case of Papillon-Lefèvre syndrome. *J Clin Periodontol* 15:17-26, 1988.
13. Schroeder, H.E. et al. Behavior of neutrophilic granulocytes in a case of Papillon-Lefèvre syndrome. *J Clin Periodontol* 10:618-635, 1983.
14. Lyberg, T. Immunologic study of Papillon-Lefèvre syndrome in two siblings. *J Periodont Res* 17:563-568, 1982.
15. Sloan, P. et al. Histopathological and ultrastructural findings in a case of Papillon-Lefèvre syndrome. *J Periodontol* 55:482-485, 1984.
16. Eronat, E. et al. Papillon-Lefèvre syndrome: treatment of two cases with a clinical microbiological and histopathological investigation. *J Clin Pediatric Dent* 17:99-104, 1993.
17. Tinanoff, N. et al. Treatment for the periodontal component of Papillon-Lefèvre syndrome. *J Clin Periodontol* 13:6-10, 1986.

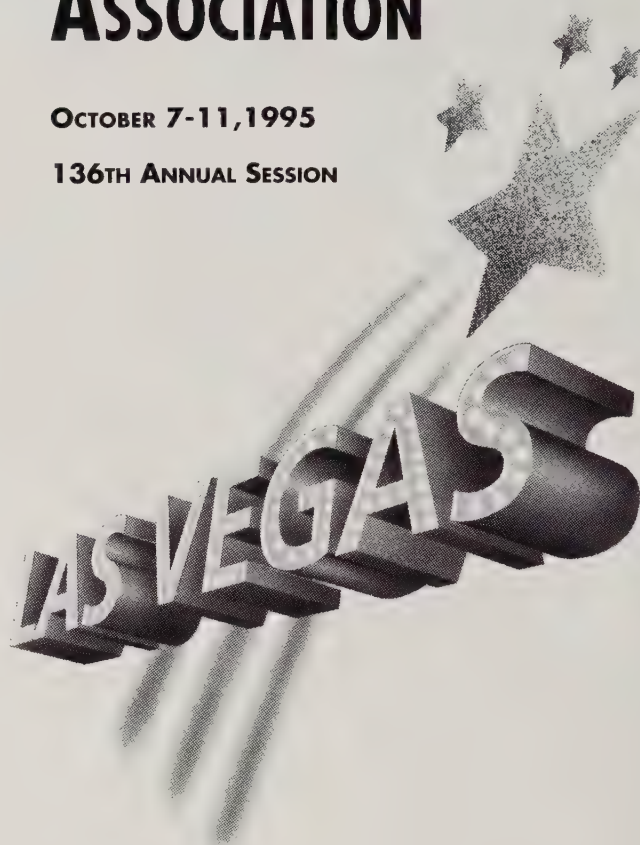


18. Bimstien, E. et al. Periodontitis associated with Papillon-Lefèvre syndrome. *J Periodontol* 61:373-377, 1990.
19. Jung, J. et al. Scanning electron microscope of plaque in Papillon-Lefèvre syndrome. *J Periodontol* 52:442-446, 1981.
20. Rateitschak-Pluss, E.M. and Schroeder, H.E. History of periodontitis in a child with Papillon-Lefèvre syndrome. A case report. *J Periodontol* 55:35-46, 1984.
21. Preus, H.R. Treatment of rapidly destructive Papillon-Lefèvre syndrome. Laboratory and clinical observations. *J Clin Periodontol* 15: 639-643, 1988.
22. Preus, H.R. et al. Association between bacteriophage-infected actinobacillus actinomycetemcomitans and rapid periodontal destruction. *J Clin Periodontol* 14:245-247, 1987.
23. Van Dyke, T.E. et al. The Papillon-Lefèvre syndrome: neutrophil dysfunction with severe periodontal disease. *Clin Immunol Immunopathol* 31:419-429, 1984.
24. Jackson-Lu, H. et al. Treatment of a patient with Papillon-Lefèvre. A case report. *J Periodontol* 58:789-793, 1987.
25. Djawari, D. Deficient phagocytic function in Papillon-Lefèvre syndrome. *Dermatologica* 156:189-192, 1978.
26. Preus, H.R. and Morland, B. In vitro studies of monocyte function in two siblings with Papillon-Lefèvre syndrome. *Scand J Dent Res* 95:59-64, 1987.
27. McDonald, R. and Baer, P.N. Suggested mode of periodontal therapy for patients with Papillon-Lefèvre syndrome. *Periodontal Case Reports* 3:10, 1981.
28. Gordon, J.M. and Walker, C.B. Current status of systemic antibiotic usage in destructive periodontal disease. *J Periodontol* 64:760-771, 1993.
29. Saxen, L. and Asikainen, S. Metronidazole in the treatment of localized juvenile periodontitis. *J Clin Periodontol* 20:166-171, 1993.
30. Bergman, R. and Friedman-Birnbaum, R. Papillon-Lefèvre syndrome: a study of the long-term clinical course of recurrent pyogenic infections and the effects of etretinate treatment. *Brit J Dermatol* 11:731-736, 1988.
31. Driban, N.E. and Jung, J.R. Papillon-Lefèvre syndrome. A clinical and therapeutical contribution. *Dermatologica* 165:653-659, 1982.
32. Nazzaro, V. et al. Papillon-Lefèvre syndrome. Ultrastructural study and successful treatment with acitretin. *Arch Dermatol* 124:533-539, 1988.
33. Berkovitz, B. and Maden, M. Cellular retinoic acid binding protein in the periodontal ligament. *J Periodontol* 64:392-396, 1993.
34. Overall, C.M. Regulation of tissue inhibitor matrix metalloproteinase expression. *Ann NY Acad Sci.* 732:51-64, 1994.

AMERICAN DENTAL ASSOCIATION

OCTOBER 7-11, 1995

136TH ANNUAL SESSION



PLEASE SEND INFORMATION ON THE 1995 ANNUAL SESSION

NAME

ADA MEMBERSHIP, IF APPLICABLE

ADDRESS

CITY, STATE, ZIP

COUNTRY, IF NOT USA

RETURN TO:

COUNCIL ON ADA SESSIONS
AND INTERNATIONAL PROGRAMS
AMERICAN DENTAL ASSOCIATION
211 EAST CHICAGO AVENUE
CHICAGO, ILLINOIS 60611-2678 USA



JOURNAL

May/
Mai
1995
Vol. 61
No. 5

Focus ON FINANCIAL SUCCESS

How can you learn to set — and achieve — financial goals while you're busy managing your dental practice?

By attending a unique one-day seminar sponsored by CDSPI called "**Focus on Financial Success**," being presented in five Canadian locations this fall.

This highly time-efficient seminar will cover a wide range of financial topics of importance to you, including:

- *Setting financial goals*
- *Choosing investments/ mutual funds*
- *Tax reduction strategies*
- *Using RRSPs effectively*
- *Funding education*
- *Selecting a financial advisor*
- *Estate planning*
- ... and more!

The seminar leader is **Peter Volpé**, one of Canada's leading financial advisors and lecturers, and a regular contributor to the *Globe and Mail*, *Financial Post*, *Financial Times* and *Canadian Business*.

He'll help you learn invaluable financial tips in an enjoyable "hands on" way. And you'll take home a comprehensive reference volume to help you continue your financial progress.

The fee for this invaluable seminar is **only** \$247 plus tax, and CDA RSP participants benefit from a 20% discount. Even better, spouses of attending dentists pay half price. Past CDSPI seminars have sold out — so register early.

In one day you'll learn all about proven strategies to attain your financial goals. So take advantage of this exceptional opportunity to focus on your financial success — call today for details.

Focus ON FINANCIAL SUCCESS

September 15, 1995.....Halifax
September 29, 1995.....Ottawa
October 13, 1995.....Winnipeg
October 27, 1995.....Calgary
November 17, 1995.....Vancouver

Call CDSPI to register or for more information:

1-800-561-9401 Toll-free
(416) 296-9401 Metro Toronto
Extension 253



CDSPI

CANADIAN DENTAL SERVICE PLANS INC.

100 Consilium Place, Suite 710
Scarborough, Ontario
M1H 3G8

FINANCIAL PROGRAMS DESIGNED BY DENTISTS FOR DENTISTS

The Modular Dental Management System, EXCEL, is endorsed by CDSPI. For information contact Zadall Systems Group Inc. Telephone 1-800-663-1236.

GUARANTEED TO PREVENT DECAY IN DENTISTS.



No one wants to see their hard earned profits being eaten away by all the costs involved with running, or starting up, a practice. We've got a plan to help prevent financial decay. It's called the Scotia Professional Plan™, and you'll

find it right next door at Scotiabank. It's a unique plan we've designed specifically to save dentists time and money. You'll receive higher loan limits at lower interest rates. Interest on current accounts at Money Market rates.

Pre-approved overdraft protection. A ScotiaGold® VISA* card with no annual fee.

A specially trained Scotiabank manager will customize the Plan for you. Whether that means 100% financing for your business or personal needs;† Or meeting your longer term investment goals. We'd like to meet with you to tell you more.

Just contact your local Scotiabank branch for a free financial check-up.

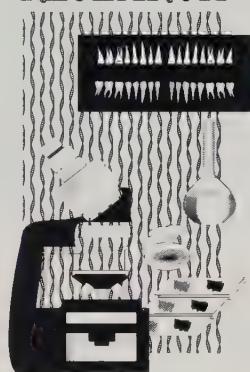
SCOTIA PROFESSIONAL PLAN...NOW AVAILABLE ON CDAnetplus



Scotiabank 

 **CDAnetplus**

RESEARCH



Osteomyelitis Of the Jaws

Steve Bernier, DMD

Sylvie Clermont, DMD

Guy Maranda, DDS, FRCD(C)

Jean-Yves Turcotte, DDS, CD, MRCD(C)

ABSTRACT

Osteomyelitis is described as an inflammation of bone and bone marrow that may develop in the jaws following a chronic odontogenic infection or for a variety of other reasons. This situation may be acute, sub-acute or chronic, resulting in a totally different clinical picture.

Key Words: *Osteomyelitis, ossifying periostitis, ossifying periostitis proliferans, sclerosing osteitis.*

SOMMAIRE

L'ostéomyélite est une inflammation de l'os et de la moelle osseuse qui peut se développer dans les mâchoires à la suite d'une infection de nature odontogénique ou encore en raison d'une variété d'autres situations. La maladie peut être aiguë, sub-aiguë ou chronique et présente un tableau clinique différent selon sa nature.

Mots clés: *Ostéomyélite, périostite ossifiante, périostite ossifiante proliférative, ostéite sclérosante.*

Introduction

The dentist is usually the first health care practitioner to see problems related to the mouth and masticatory apparatus. In order to successfully treat these conditions, or refer the patient to a specialist, the dentist must be well

informed about the signs and symptoms of oral pathology.

Although osteomyelitis occurs infrequently, it must be recognized early (particularly in its acute phase) and treated promptly to avoid complications that may lead, in some cases, to a partial or complete bony resection. By virtue of its inflammatory process in the bone and bone marrow, osteomyelitis may also lead to suppurative or non-suppurative condition. It is spread hematogenously (very rare); by a focus of infection; or through its association with a peripheral vascular disease.

Most cases of osteomyelitis are spread from an infectious process originating from a dental or periodontal infection, infections of the surrounding soft tissues or sinus cavities, or a bony fracture. Some cases are known to occur following post-radiotherapeutic treatments. Also, 29 per cent of the population with falciform anemia will suffer at least one episode of osteomyelitis during their life.¹

This paper will describe the clinical and the radiological aspects of: osteomyelitis, acute suppurative osteomyelitis, chronic suppurative osteomyelitis, chronic focal sclerosing osteomyelitis, chronic diffuse sclerosing osteomyelitis, Garré's sclerosing osteomyelitis and osteoradionecrosis.

Acute Suppurative Osteomyelitis

Description

This form of osteomyelitis involves the bony medulla. It results in an increase of intra bony pressure, thereby diminishing the vascularity.² The infection spreads through the haversian canals to reach the cortex and the periosteum, further diminishing the bony vascular process. This ischemia ultimately causes an irreversible bony necrosis.

A periapical abscess may be transformed into osteomyelitis when predisposing factors such as virulence of organisms, diminution of host resistance, and vascularity are involved. Certain systemic diseases such as leukemia, alcoholism, diabetes, malnutrition, and AIDS, among others, may also decrease the local resistance, thus helping to disseminate the infection.

Conditions such as fibrous dysplasia, Paget's disease, osteopetrosis, intrabony neoplasia, and radiotherapy will decrease the local vascular flow. These conditions will then favor bony tissue necrosis and secondary infection.

The frequency of osteomyelitis has been shown to be six times greater in the mandible than in the maxilla. This increased frequency occurs because the mandible is less vascular than the maxilla. It is

JOURNAL

May/
Mai
1995
Vol. 61
No. 5

Table I

Empirical

First treatment	Penicillin allergy	Staphylococcus
Penicillin GK 2.5 x 10 ⁶ units I.V. q. 4 hrs or	Clindamycin 600 mg I.V. q. 6 hrs or	Cloxacillin 1.0 g I.V. q. 4 hrs or
Penicillin V 300 - 600 mg po q. 4 hrs	Erythromycin 1.0 g I.V. q. 6 hrs or	Cloxacillin 500 mg po q. 6 hrs
	Erythromycin 500 mg po q. 4 hrs or	
	Cephalosporin (10-15% crossed allergy with penicillin)	
	Cefazolin 1.0 g I.V. q. 8 hrs or	
	Cephalexin 500 mg po q. 6 hrs	

also well known that in 80 to 90 per cent of cases the offending bacteria are staphylococcus aureus and epidermidis, although staphylococcus epidermis is the laboratory result of contamination of the specimens. Other species are also involved. Streptococci, bacteroides, lactobacilli, klebsiella, fusobacteria and anaerobes are found in 50 per cent of cases.

Clinical Findings

Acute suppurative osteomyelitis can occur in both the maxilla and mandible. It remains more localized in the maxilla, but in the mandible it will spread and diffuse widely. This condition can occur at any age, and children may show the acute form. The hematologic origin is demonstrated occasionally, but the condition often originates from a local infection caused by a minor break or laceration of the mucosa. Children showing the acute form are often very ill, and may not survive the disease as it is impossible to pin-point the offending bacteria.³ Adults will experience a sharp, deep, constant and dull pain. A mild to moderate hyperthermia can be present associated with palpable adenopathies, and the blood count will show a light leukocytosis, as expected in a mild infection process.

When the process involves the mandible, a paresthesia or dysesthesia of the lower lip may appear due to mandibular canal involvement. The infection will spread to reach the periosteum and adjacent soft tissues, and then a hard swelling will begin to show. The teeth will be sensitive and mobile, and

purulent drainage will appear at the periodontal attachments.

Roentgenological Findings

A bony lesion will not show demineralisation of 30 to 60 per cent on X-rays until the pathological process has been present for five to 10 days, and an early diagnosis cannot be made from X-rays. Nevertheless, as the process continues, diffuse osteolytic changes will appear and some radiopaque zones may be present. These zones represent intact bony particles known as bony sequestra.⁴

Bone scans provided by department of nuclear medicine will be useful in diagnosing the acute phase at the stage when it is most difficult to identify — within 24 hours of onset. This examination will also help to outline the extent of involvement.

Treatment

The diagnosis must be made early in the process (three to four days from onset). At that point, both medical and surgical treatments are needed. First, if a localized, fluctuant swelling is present, incision and drainage are required, and the offending tooth or teeth must be removed. Cultures and sensitivities are essential. In addition, intravenous antibiotic therapy must be instituted quickly. Penicillin is the antibiotic of choice because of its effect on streptococci and certain anaerobes (Table I).

Clindamycin remains the drug of choice when there is a penicillin allergy, but first-generation erythromycin or cephalosporin

can also be used. It is important to note, however, that a cross allergy exists in 10 to 15 per cent of the patients allergic to penicillin.

Following the results of the antibiogram and the patient's response, the antibiotic regimen may be modified. Intravenous therapy should be continued for 48 to 72 hours after the symptoms have disappeared, and oral antibiotic therapy followed for two to four weeks. Since the majority of these patients demonstrate a compromised immunity, support therapy must be instituted to favor the healing process. Hyperbaric oxygen therapy for two hours daily has been used in some instances.

In cases of mandibular fractures,⁵ the length of time since fracture will guide the treatment. If the fracture and its symptoms are present for more than 48 to 72 hours, we may presume that the patient will develop osteomyelitis. Routine intravenous antibiotic therapy must be instituted in all cases of complex mandibular fracture. If the fracture is simple, there is no reason to fear such an infection, however, and the usual intermaxillary fixation can be done.

Chronic Suppurative Osteomyelitis

Description

This form of osteomyelitis may occur subsequent to the acute phase, or it may arise from a dental infection without preceding the acute stage.³ The lesion is usually associated with an infected tooth, and the etiological factors are the same as for acute osteomyelitis.



Free VS Costly



Submitting insurance claims has never been easier! With one press of a button, **CDAnet** links your practice to a network of dental insurance carriers to provide immediate confirmation of claim receipt or on-line adjudication.

This easy-to-use electronic claims processing system, developed by the Canadian Dental Association, has no transaction or user fees.

Designed by dentists for dentists, **CDAnet** puts you on the information superhighway to eliminate expensive postage costs and time wasted processing claims by mail. Immediate claims processing means greater efficiency and improved cash flow.

To find out how you can take advantage of the information age and put **CDAnet** to work for you, call 1-800-267-9701.



**CANADIAN
DENTAL
ASSOCIATION**



**Dentistry's National
Information Network**

RATED #1 IN THEIR CLASS.

Dental Advisor's latest survey on amalgam alloys rated every product in the Valiant® line at the very top... right where they've been for

20 years. Not only do Valiant® amalgams offer superior strength and handling characteristics, but the patented Sure-Cap® system assures safe handling, too. Now the full line of Valiant® amalgams — including palladium enriched Valiant®, Valiant® Ph.D.® and Valiant® Snap-Set™ — is available through your local dealer from Ivoclar Vivadent. Ideal for use with our Silamat® and Silamat® Plus amalgamators.



VALIANT

IVOCLAR VIVADENT
IVOCLAR NORTH AMERICA, INC.

For information on this or any other products in our system, call us toll free at 1-800-5-DENTAL in the U.S., 1-800-263-8182 in Canada.

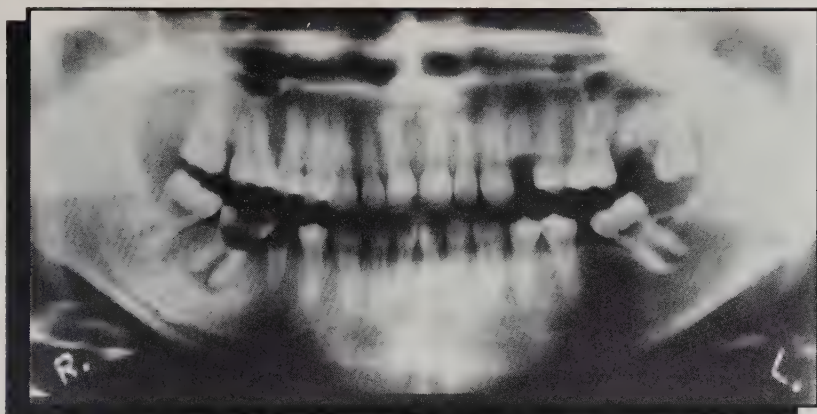


Fig. 1: Extensive focal sclerosing osteomyelitis is evident subjacent to the carious right first molar tooth. (Reprinted with permission from *Oral Maxillofacial Diagnostic Imaging*. Allan G. Farman, Christoffel J. Nortjé and Robert E. Wood (eds.), St. Louis, Mosby, 1993.)

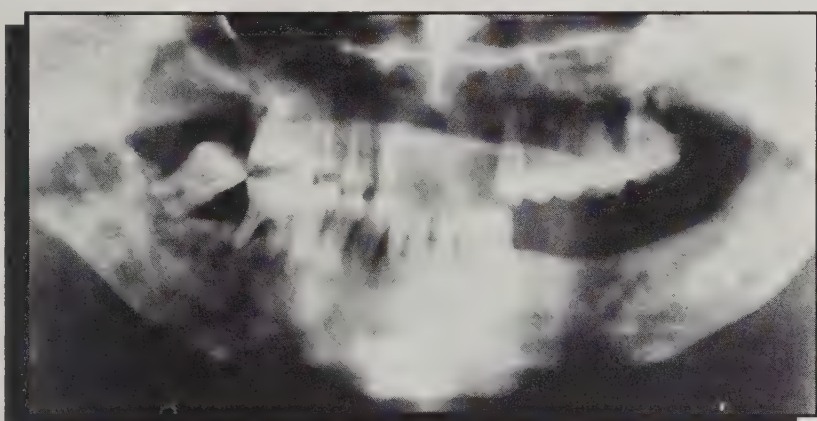


Fig. 2: Chronic diffuse sclerosing osteomyelitis of mandible. (Reprinted with permission from *Oral Maxillofacial Diagnostic Imaging*. Allan G. Farman, Christoffel J. Nortjé and Robert E. Wood (eds.), St. Louis, Mosby, 1993.)

Clinical Findings

Clinically, the symptoms of chronic suppurative osteomyelitis are similar to those of acute osteomyelitis, but are less profound with less general health involvement. There may be episodes of acute pain, and drainage may perforate the bone and form a fistula.

Roentgenological Findings

Radiotransparent areas of bone destruction will appear and bony sequestra will form.⁴

Treatment

Same treatment is given as for acute osteomyelitis.

Chronic Focal Sclerosing Osteomyelitis

Description

Chronic focal sclerosing osteomyelitis is an unusual reaction of bone to infection that takes

place when the host resistance is optimal, and the infectious agent possesses little virulence.³ Histologically, this condition brings about an increase of bone formation, with the infection acting as a stimulus.

Clinical Findings

This form of osteomyelitis presents before the age of 20. A first molar (36-46) with a large carious process is most often involved. Very few signs or symptoms are present except those associated with a slowly developing pulpitis.

Roentgenological Findings

X-rays will show a sclerotic opaque bony mass at the apices of the tooth. The apex can be seen without an osteolytic lesion around it (**Fig. 1**).

Treatment

This condition requires either endodontic therapy or the removal

of the tooth. If the offending tooth is removed, the surrounding bony mass will remain in place as it is not attached to the tooth. There is no need to remove this mass.

Chronic Diffuse Sclerosing Osteomyelitis

Description

Until recently, this condition was described as being similar to chronic sclerosing osteomyelitis. In some cases, the cause of chronic diffuse sclerosing osteomyelitis is not related to dental caries, but to a severe chronic marginal periodontitis.³

During the past 10 years, new studies have been published and new hypotheses on the causes of chronic diffuse sclerosing osteomyelitis have been advanced. These include an immunological response to bacterial toxins, local infection, endogenous infection and hyperactive immunologic response. None of these hypotheses can totally explain the etiology, however.⁶

In 1990, Van Merkesteyn et al⁶ reported a series with 27 patients. The analysis has led to the hypothesis that a tendoperiostitis of the masseter and digastric muscles may be a causative factor. In other words, an hyperplastic reaction of the bone may be caused by a chronic tendoperiostitis resulting from muscular overload.

This hypothesis has led researchers to reconsider their management of these patients. Specifically, they now believe that a simple infectious process cannot totally explain the chronicity and recurrence of the disease, particularly when there is an absence of pus, localization in the posterior portion of the mandible, resistance to antibiotic therapy and resolution of the problem after remodeling of the bony constituents. Moreover, Van Merkesteyn reported that cultures frequently provided negative results, and histology showed either reactional bony changes or normal bone. No infectious etiology was found in the 27 patients. The reappearance of symptoms occurred after surgical decortication of the mandible. Moreover, frequent parafunctional

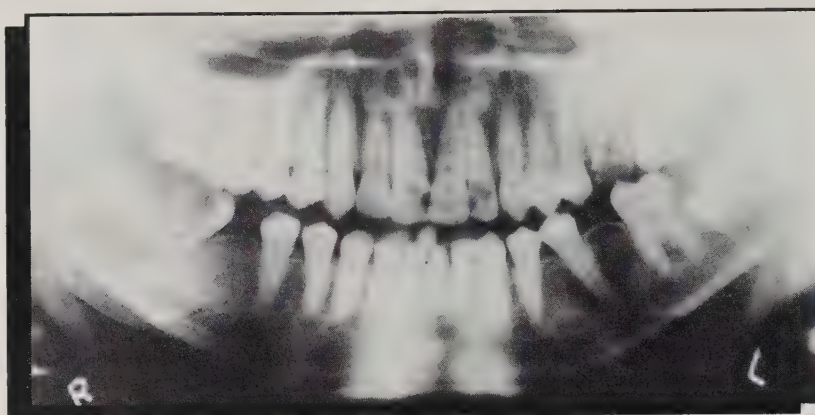


Fig. 3: Periostitis ossificans (periosteal new bone formation) on the lower border of the right side of the mandible, subjacent to a grossly carious second permanent molar. The original outline of the mandible is still clearly demonstrated. (Reprinted with permission from *Oral Maxillofacial Diagnostic Imaging*. Allan G. Farman, Christoffel J. Nortjé and Robert E. Wood (eds.), St. Louis, Mosby, 1993.)

activities were noticed and a direct relationship was found between exacerbation of symptomatic periods and stress in these patients.

Clinical Findings

This entity can manifest itself at any age, but the condition is found mostly in the elderly with edentulous mandibles. Chronic diffuse sclerosing osteomyelitis is very insidious. Symptoms are recurring pain, swelling and even trismus.⁷

Roentgenological Findings

According to the phase of the disease, osteolytic zones and diffuse sclerotic bone in the posterior mandible may be seen on the films. These lesions can be bilateral, in the anterior portion of the mandible, and rarely occur in the maxilla. During the sclerotic phase, the appearance of "cotton wool" can mimic Paget's disease. In its early stages, the lesion is difficult to distinguish from fibrous dysplasia (**Fig. 2**).³⁻⁸

With the use of axial tomography (taco) and nuclear medicine, large zones have been found in the mandible, the temporomandibular joint and even up to the mastoid process.⁹

Treatment

Treatment has consisted of antibiotics, anti-inflammatory medication, surgical exploration, insertion of local gentamicin and hyperbaric oxygen, but to no avail.⁶⁻⁸ Van Merkesteyn and collaborators^{6,7} have suggested a new

therapeutic approach: muscular relaxation, physiotherapy, occlusal splints and diazepam.

Surgical Decortication⁸

Surgical decortication can be tried in severe cases, but this is only successful in 50 per cent of patients. In recurrent cases, mandibular resection of the affected zone has been suggested, with all the known disadvantages.⁸

Since the cause of this condition is not known, the use of the least invasive and aggressive methods of treatment are recommended. Antibiotics and anti-inflammatory drugs should be used if infection is suspected. The use of muscular relaxation is in order, as well as a change in parafunctional habits.

Garré's Chronic Sclerosing Osteomyelitis (Proliferative Osteomyelitis)

Description

Garré's chronic sclerosing osteomyelitis (also known as proliferative osteomyelitis) can be considered as an entity by itself.^{9,10} The main characteristic is new bone formation at the outer layer of the cortex, covering an infected spongiosa. This bony formation is an inner response of the periosteum secondary to an infectious process that travelled through the bone and penetrated the cortex. Usually, staphylococci and streptococci are found. A dental apical infection causes this proliferative periostitis, but it has been

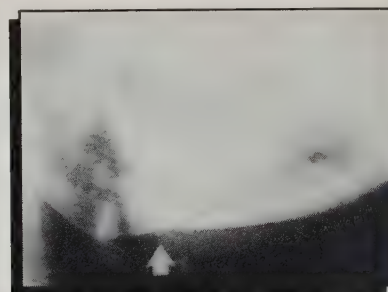


Fig. 4: Osteomyelitis post radiation.

seen in cases of pericoronitis. Three conditions are necessary for its development:

- The periosteum must be active;
- A chronic infection must be present;
- An equilibrium must exist between the host's resistance, and the number, type and virulence of bacteria, so that the infection may develop quietly. Periosteum stimulation will result from this process, but the infection, not being acute enough, will not induce bony lysis.

Clinical Findings

This condition is found in children and in patients under the age of 30 complaining of pain caused by an odontogenic infection. The patient will present with a non painful swelling at the inferior border of the mandible. Some cases have been reported in the maxilla. No sex predilection exists. The mucosa and skin appear normal, and the patient's general health and blood tests are normal.

Roentgenological Findings

X-rays will show a convex bony curvature originating from the cortex. This radiopaque bony curvature shows an onion-skin appearance. The adjacent bone is normal, but some radiolytic or sclerotic lesions may be present. Close examination is necessary to rule out tori or bony exostoses. An infected tooth must be present to confirm the finding (**Fig. 3**).

Treatment

The infected tooth must be extracted and antibiotherapeutic coverage instituted. Usually the le-



Don't burden your family with the decision

You should make an informed choice about organ and tissue donation and communicate it to your family in case a tragic event occurs.

CCODA The Canadian Coalition on
Organ Donor Awareness

sion will disappear in two to six months.

Osteoradionecrosis

Description

This condition is serious. Initially, the bone resembles chronic osteomyelitis, with the formation of pus and bony sequestra. Cases involving complete loss of a portion of the jaws have been described.

Radiotherapy treatments induce many changes to the oral tissues, including xerostomia and degradation of the soft and hard tissues, since the blood supply is decreased and with formation of an osteoid tissue.¹¹ The blood vessels are affected by a proliferative endarteritis causing a stenosis with poor irrigation of the bony substance.³ Poor oxygenation results, and the bone becomes fragile, tends to disintegrate, and may even fracture. The periosteum reacts in the same way and detaches from the bone.¹¹

Bone necrosis will occur if a heavy radiation dose has been received, causing an ischemia followed by necrosis, infection and osteomyelitis.¹² The mucosa, being very fragile, will rupture to expose the underlying bone, allowing buccal bacteria to infiltrate the bone which is unable to react.

Removal of teeth during the post-radiation therapy period is the major cause of such a problem, since no healing will take place. The same situation will occur with an infected tooth or periodontal infection.^{3,11,12}

The predisposing factors leading to radionecrosis are:³

1. Incomplete healing following surgery by radiotherapy;
2. Proximity of lesion to the bony structures;
3. High radiation doses;
4. Combined treatment of cobalt and megavoltage;
5. Poor oral hygiene;
6. Poor patient cooperation in preventive measures;
7. Surgery done within the target field;

8. Early insertion of dental prosthesis;
9. Non prevention of trauma to the treated area;
10. Poor physical status and nutrition of the patient.

Clinical Findings

In patients with osteoradionecrosis, the bone becomes very painful and the lesion will extend rapidly inside the osseous structure exposing large portions of bone. All that remains within the dental alveolus may be "bare bone" (Fig. 4).

Treatment

Local wound cleansing, antibiotics, removal of bony sequestra and hyperbaric oxygen therapy, followed by bone reconstruction, if it is warranted by the patient's status.¹¹

Conclusion

The jaws can show many forms of osteomyelitis. Some are benign, but others are aggressive and invasive. Early diagnosis and rapid treatment must be undertaken in order to avoid complications.

The dentist must always be aware of these conditions and their symptoms, and be dedicated to their prevention and management, especially for those patients who have healing problems. ■

Dr. Bernier is a multidisciplinary resident, Sir Mortimer B. Davis Jewish General Hospital, Montreal.

Dr. Clermont is in private practice in Brossard, Qué.

Drs. Maranda and Turcotte are professors of oral and maxillofacial surgery, Faculté de Médecine Dentaire, Université Laval, Québec, Qué.

Reprint requests to: Dr. Jean-Yves Turcotte, department of Oral and Maxillofacial Surgery, Faculté de Médecine Dentaire, Université Laval, Québec, Qué. G1K 7P4.

References

1. Patton, L.L., Brahim, J.S. and Travis, W.D. Mandibular osteomyelitis in a patient with sickle cell anemia: report of case. *JADA* 121:602-604, 1990.

2. Morin, E. and Morais, D. A propos du diagnostic et du traitement précoce de l'ostéomyélite aiguë. *J Dent Qué* 30:49-52, 1993.

3. Shafer, W.G., Hine, M.K. and Levy, B.M. *A textbook of oral pathology*. Ed.4. Philadelphia, W.B. Saunders Company, 1983, pp. 498-570.

4. Peterson, L.J., Ellis, E., Hupp, J.R. et al. *Contemporary oral and maxillofacial surgery*. St.Louis, C.V. Mosby Company, 1988, pp. 418-36.

5. Maloney, P.L., Welch, T.B. and Doku, H.C. Early immobilization of mandibular fractures: A retrospective study. *J Oral Maxillofac Surg* 49:698-702, 1991.

6. Van Merkesteyn, J.P.R., Groot, R.H., Bras, J. et al. Diffuse sclerosing osteomyelitis of the mandible: A new concept of its etiology. *Oral Surg Oral Med Oral Pathol* 70:414-419, 1990.

7. Groot, R.H., Van Merkesteyn, J.P.R., Van Soest, J.J. et al. Diffuse sclerosing osteomyelitis (chronic tendoperiostitis) of the mandible: an 11-year follow-up report. *Oral Surg Oral Med Oral Pathol* 74:557-560, 1992.

8. Montonen, M., Iizuka, T., Hallikainen, D. et al. Decortication in the treatment of diffuse sclerosing osteomyelitis of the mandible: Retrospective analysis of 41 cases between 1969 and 1990. *Oral Surg Oral Med Oral Pathol* 75:5-10, 1993.

9. Wood, N.K. and Goaz, P.W., *Differential diagnosis of oral lesions*. St. Louis, Mosby-Year Book, 4th. edition, 1991, pp. 522-538.

10. Felsberg, G.J., Gore, R.L., Schweitzer, M.E. et al. Sclerosing osteomyelitis of Garré (periostitis ossificans). *Oral Surg Oral Med Oral Pathol* 70:117-120, 1990.

11. Marciani, R.D. and Ownby, H.E., Osteoradionecrosis of the jaws, *J Oral Maxillofac Surg* 44:218-223, 1986.

12. Marx, R.E. Osteoradionecrosis: A new concept of its pathophysiology. *J Oral Maxillofac Surg* 41:283-288, 1983.

13. Calhoun, K.H., Shapiro, R.D., Stierberg, C.M. et al. Osteomyelitis of the mandible. *Arch Otolaryngol Head Neck Surg* 114:1157-1162, 1988.

14. Harris, L.F. Chronic mandibular osteomyelitis. *South Med J* 79:696-697, 1986.

15. Steiner, M., Gould, A.R. and Means W.R. Osteomyelitis of the mandible associated with osteopetrosis. *J Oral Maxillofac Surg* 41:395-405, 1983.

16. Hoen, M.M., Downs, R.H., Labounty, G.L. et al. Osteomyelitis of the maxilla with associated vertical root fracture and Pseudomonas infection. *Oral Surg* 66:494-497, 1988.

17. Fukuda, J., Shingo, Y. and Miyako, H. Primary tuberculous osteomyelitis of the mandible: A case report. *Oral Surg Oral Med Oral Pathol* 73:278-280, 1992.

Play in an Aurum Ceramic/Classic Golf Tournament in '95 and

WIN A SHOT AT \$1,000,000

HOW TO QUALIFY

Individual qualifiers will be chosen by a closest-to-the-hole competition at a designated Par 3 hole during regular play at each Aurum Ceramic/Classic tournament. Each eligible qualifier will be entitled to one of 20 shots during special "Shoot-Outs" held following regular play at the Kananaskis, AB or the CDA tournaments.

GET A HOLE-IN-ONE, WIN A MILLION!

- Pot a Hole-In-One as a Shoot-Out Qualifier- you win \$1,000,000 (paid out as an annuity of \$25,000 per year over 40 years). And, you'll qualify for the legendary Tournament of Aces, a 36 hole event held at the prestigious TPC course at Woodlands, Texas - all expenses paid. Once there, you'll be competing for more than \$1 million in additional cash and prizes.
- Consolation prizes contributed by:
 - Midland Walwyn
 - Nobelpharma Canada Inc.
 - Canadian Airlines International
 - Château Cartier Sheraton

SUPPORT THE DENTISTRY CANADA FUND

You'll be helping to raise moneys in support of Canada's only non-profit, charitable organisation dedicated to encouraging optimal oral health for all Canadians. Twenty dollars from each entry fee paid at an Aurum Ceramic/Classic Golf Tournament will be donated to the Dentistry Canada Fund. A tax receipt in that amount will be issued to each golfer.

SPACE IS LIMITED! SIGN UP TODAY!

For more information and to reserve your place, call our Golf Registration Department:

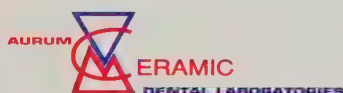


MILLION DOLLAR SHOOT-OUT QUALIFYING TOURNAMENTS

Vernon, BC	May 5	Predator Ridge Golf & C.C.
Castlegar, BC	May 6	Castlegar Golf
Vancouver, BC	May 12	Seymour Golf & C.C.
Medicine Hat, AB	June 9	Medicine Hat Golf & C.C.
St. Catharines, ON	June 9	Rockway Glen Golf & C.C.
Calgary, AB	June 12	Pinebrook Golf & C.C.
Grande Prairie, AB	June 16	Grande Prairie Golf & C.C.
Kelowna, BC	June 23	Predator Ridge Golf & C.C.
Cornwall, ON	June 30	Summer Heights Golf Links
Winnipeg, MB	July 14	Quarry Oaks
Kananaskis, AB	July 14	Kananaskis Golf & C.C.
Edmonton, AB	Aug. 10	Indian Lakes
Renfrew, ON	Aug. 25	Arnprior Golf & C.C.
CDA Tournament	Aug. 27	Chaudière Golf Club
Victoria, BC	Sept. 8*	Olympic View
Kamloops, BC	Sept. 8*	Rivershore
Montreal, QC	Sept. 14*	Club de Golf le Cardinal
New Glasgow, NS	Sept. 15*	Abercrombie
Lethbridge, AB	Sept. 22*	Paradise Canyon

** qualify for either Kananaskis or CDA Shoot-Out in 1996*

Sponsored by



TOLL FREE
1-800-661-1169



The Canadian Dental Association Taking Care of Business



“Developed in
partnership with
CDA by **ExperDent**
Consultants.”



See next page for more details...

Taking Care of Business is an essential resource for every dentist!

Over two years in development by the Canadian Dental Association in partnership with ExperDent Consultants, ***Taking Care of Business*** is the most extensive project in practice management that the CDA has ever undertaken. We went to the experts in Canadian dental practice management to bring you the most up-to-date and thorough practice management materials available anywhere in North America!

Volume 1 • Practice and Value Management

- Why practice value is important
 - Understanding your practice's potential
 - How to develop a financial plan
 - Examining your break even point
 - Patient management & recall strategies
 - Case management & treatment acceptance
 - Collections & payment control techniques
 - **260 pages plus worksheets and cassettes**
- Overview of major management systems
 - Overview of major career stages
 - Personal and practice budgeting
 - Setting realistic goals for practice growth
 - Marketing & growth strategies
 - Scheduling & appointing strategies
 - Introduction to practice transitions

Volume 2 • Associate and Transition Planning

- Key management areas for dentists
 - Why growth stops for most dentists
 - Transition choices for new dentists
 - Negotiating successful associateships
 - Designing and building a dental practice
 - Compensation plans for associates
 - Factors in sale/purchase transactions
 - **300 pages plus cassettes**
- The dental career cycle
 - Factors in retirement planning
 - Starting a new practice
 - Negotiating successful partnerships
 - Key factors in legal agreements
 - Practice valuation methods
 - Managing staff & patients during transitions

Volume 3 • Selecting a Dental Computer

- Preventing costly mistakes
 - Why computerizing is important
 - Review of the basics
 - How to evaluate the options
 - Understanding operating system environments
 - Evaluating support and maintenance
 - **150 pages plus worksheets**
- Uncovering hidden costs
 - How to choose a vendor
 - Learn about purchase contracts
 - Hardware & software needs
 - Installation and training
 - Getting comfortable with the language

Name: _____
Address: _____
Suite #: _____ City: _____
Prov: _____ Postal: _____
Telephone: (_____) _____
CDA Membership #: _____

☐ Cheque/money order enclosed.☐ Visa ☐ MasterCard Expiry Date:

Credit Card #:

Signature:

Mail or fax order form and payment to: **Canadian Dental Association**,
Member Services, 1815 Alta Vista Drive, Ottawa, ON, K1G 3Y6
Order today! Call CDA toll-free 1-800-267-6354 or fax 1-613-523-7736.
Please allow 8 weeks for delivery.

Taking Care of Business • Volume 1
Practice & Value Management

Taking Care of Business • Volume 2
Associate & Transition Planning

Taking Care of Business • Volume 3
Selecting a Dental Computer

Subtotal

Shipping & Handling
\$5.50 per volume ordered

Subtotal

GST: 7% of subtotal (#R106845209)

PST: 8% of subtotal (Ontario only)

TOTAL \$

Member	Regular	Total
\$200	\$300	
\$150	\$250	
\$140	\$190	

Shipping & Handling
 for volume ordered

Subtotal

al (#R106845209)

total (Ontario only)

TOTAL \$

CDA Access Ads

CDA ACCESS ADS offer guaranteed access to Canada's largest audience of dentists. To place your ad, call **Neil McGillivray** toll-free across the country at **(800) 661-5004**. In the Toronto calling area, please dial **(905) 278-6700**.

Replying to a CDA Access Box Number? Simply write to:
CDA Access Box ____,
1382 Hurontario St.,
Mississauga, Ont. L5G 3H4.
Or you may fax your reply to (905) 278-4850, noting the appropriate box number.

Offices & Practices

BRITISH COLUMBIA - Nanaimo: Exceptional opportunity/location for sale - First-class dental office in busy major shopping centre, five operatories, high new patient flow, great history and even better future expected. Located in Nanaimo, B.C., one of the fastest growing cities in Canada, with a great recreational environment on the ocean. Call (604) 756-1200 day or (604) 756-1082 evenings. (04/05)

BRITISH COLUMBIA - Trail: Established family practice in stable industrial economy with superb recreational opportunities. Prime location. Low overhead. Modern equipment. Owner retiring. Phone (604) 362-9426 (evenings). (06/13)

BRITISH COLUMBIA - Vancouver Region: Exciting practice purchase opportunity available near Vancouver. Well-established, health-centered general practice. Team will stay on with new owner. Current owner willing to work with buyer to ensure a smooth and successful transition. Please respond with curriculum vitae and written vision of your preferred future to CDA ACCESS Box # 2671. (05/06)

BRITISH COLUMBIA - Victoria: The charm, the people, the weather and

the economy. This computerized practice with panorex and all modern equipment grosses over \$360,000, and growing, with a solo practitioner, four days a week. The owner is going back to school. Great opportunity, will not last. Reply to CDA ACCESS Box 2664. (04/06)

BRITISH COLUMBIA - Tumbler Ridge: Practice for sale. Excellent opportunity for a young dentist. General practice with five operatories in friendly single dentist community. Low overhead with an excellent flow of patients, all of whom have superior dental benefits. One hour drive from Dawson Creek. Call (604) 242-3407 (leave a message). (05/13)

BRITISH COLUMBIA Burnaby

For sale, busy, well established family practice. Low overhead, 30-40 new patients per month, owner relocating to Kelowna. Price \$170,000.
Call **(604) 879-7596**
or reply to
CDA ACCESS Box # 2658. (02/05)

BRITISH COLUMBIA East Vancouver

For sale, established family/general practice. Excellent patient flow. Eight-year-old practice with three operatories. \$400,000 gross with low overhead. Contact:
Bing C. Wong & Associates Ent. Ltd.
(604) 682-7561. (12/05)

FOR INFORMATION ON B.C. DENTAL PRACTICES FOR SALE CALL

Health Pro Realty Ltd.
(604) 538-7838

Suite #239 - 1959 152nd Street,
White Rock, B.C. V4A 9E3

ALBERTA

Edmonton Area

Well established rural practice. Computerized, progressive office in growing community. Excellent health and recreational facilities. Reply to
CDA ACCESS Box # 2665. (04/13)

SASKATCHEWAN

Practice for sale or Locum Required

Moderate income practice for sale, all new equipment. Progressive surroundings. Please reply to
CDA ACCESS Box # 2645. (11/13)

ONTARIO - Northwestern Region:

Busy dental practice for sale. Three operatories with fully modern equipment, low overhead, 90% insurance, grossing over \$500,000. Excellent staff with full-time hygienist and strong recall base. Practice would be able to support associate also. Ideal for the outdoor enthusiast (boating, hiking, fishing). Please reply to CDA ACCESS Box # 2670. (04/06)

ONTARIO - Kitchener/Waterloo:

Practice for sale. Owner returning to school, three-year-old patient base in new (Oct. 94) location. March gross \$29,500, no assignment. Attractive stand alone building, highly visible sign, on King Street (main artery), one block from KW Hospital, paved rear parking. Bright 1,000 sq. ft. ground floor, one op., 2nd op. ready, new top equipment/instruments (Siemens OP pan/MD X-ray, Kavo chair/hps, Statim, Dentx autodvlp, two term-Abel, Safeguard full charts). Great lease with health prof. landlord, options to increase sp/purchase building. Fastest growing economy/lowest unemployment/safe friendly place to live. Call Richard (519) 888-7869 or (519) 579-1899. (05/05)

**EXCELLENT INVESTMENT
OPPORTUNITY**

For sale - Medical-Dental Building
Two Storey, Fully Leased
Prime location - Yonge-Eglinton
Toronto \$595,000
Call (416) 203-3232. (05/05)

TORONTO - ONTARIO

Excellent dental space available.
Professional building:
College & Spadina. High traffic area.
Call Ed Clair for details
(905) 882-4120 or 1-800-668-0068.

(05/05)

NOVA SCOTIA - Halifax: Bedroom community. Exceptional family practice opportunity, 30 minutes from metro Halifax. High gross, low overhead. Owner willing to assist in transition. Well equipped, comfortable office, includes Pan. Please call (902) 835-3959 or reply to CDA ACCESS Box # 2672. (05/07)

NOVA SCOTIA - Springhill: For sale - well established family practice. Two newly equipped operatories plus hygiene and pan, located in modern cost-sharing clinic. Good gross; existing overhead 50%. Supportive staff; stable economy. Close to ocean beaches, downhill and cross-country skiing, and outdoor recreation. Central Maritimes. Contact Bill Tingley at (902) 835-1103 or within Maritimes 1-800-565-1502. (04/06)

NOVA SCOTIA: Halifax: For Sale: a growing dental practice located in a high-income suburb of Halifax. Low rent and overhead expenses. A-dec equipment. Visible location. Patient flow is rapidly increasing. High patient retention. An excellent opportunity for a specialist who wants to have his/her own practice or for a general dentist looking for a growing patient-oriented practice. Call: (902) 835-3005. (03/05)

Professional Services

DENTAL UPHOLSTERY SPECIALIST

Recover your dental and side chairs on the weekend or on your vacation.

Call Jerry for information at
"RED ROOSTER DESIGNS"

(519) 666-1635

GUARANTEED WORKMANSHIP (05/10)

**I
C
G
INTERIOR
CO-ORDINATED
GROUP**

**DESIGN-DEVELOPERS-FACILITATORS
PROFESSIONAL CONSULTANTS SINCE 1973**

- * PREMISE LOCATIONS
- * LEASE NEGOTIATIONS
- * PRELIMINARY PLANS
- * WORKING DRAWINGS
- * BUDGET ESTIMATING
- * PROJECT MANAGEMENT
- * WHOLESALE PURCHASING
- * PURCHASE OR SELL PRACTICE

We at **INTERIOR CO-ORDINATED GROUP** specialize in premise and lease negotiations, design, renovations, construction, and assistance with the **Purchasing** and **Sales** of dental facilities in B.C., Alberta and the U.S.A. Review your plans with our associates before you discuss with real estate agents.

**(SAVE THOUSANDS OF DOLLARS AND ELIMINATE
COSTLY ERRORS AND UNNECESSARY MISTAKES.)**

**... NO OBLIGATION AND WE GUARANTEE OUR COMMITMENT 100% ...
THANK YOU ...WAYNE H. HARTLEY ... C.E.O. ...**

CONFIDENTIAL CONSULTATION BY APPOINTMENT ONLY.

5741-A 176th Street
Surrey, B.C. V3S 4C9

Office (604) 576-1100
Pager (604) 645-0853

CHARTERED ACCOUNTANT

Let me assist you as your
Business Advisor.

Financial statements, tax planning,
business and loan proposals, general
business consultation. Eager to provide
high quality, friendly service at
reasonable rates. Call:

(416) 282-4240 for quotations. (11/13)

Positions Available/Sought

YUKON - Whitehorse: Associate required for Klondyke Dental Clinic. If you enjoy modern city amenities and the great outdoors you are welcome to join us as a general dentist associate, or in the capacity of a children's dentist. Contact Dr. Pearson at (403) 668-4618. (02/05)

BRITISH COLUMBIA - Williams Lake: Associate wanted. Proven performer. Enthusiastic associate can easily earn a six figure income in my large family practice. Well organized, computerized office with three full time hygienists, office manager and visiting oral surgeon, anesthesiologist and periodontist. Excellent 15 year earning

track record for previous associates. Please call Alistar Menzies **COLLECT** in Williams Lake, B.C. Office (604) 398-7161, home (604) 392-2615, fax (604) 398-8633. This is a place to get both good experience and a good income. (05/13)

BRITISH COLUMBIA - Victoria: Associate wanted with view toward a future partnership for a pedodontist. Must be a caring, hard-working individual. Position available after December 1995. Your future has unlimited potential with a great lifestyle and the best climate in all of Canada. Please call (604) 744-1065 after 6 p.m. (02/05)

BRITISH COLUMBIA - Prince George: Associate wanted. Looking for a motivated conscientious associate to work with owner in a large, very modern practice located in a rapidly growing university community in north central B.C. Excellent opportunity to increase a new graduate's clinical and practice management skills. For information call (604) 964-6700. (10/13)

ASSISTANT PROFESSOR

Faculty of Dentistry

Department of Clinical Dental Sciences

The University of British Columbia

Applications are invited for a full-time Assistant Professor tenure-track position in the Division of Periodontics in the Department of Clinical Dental Sciences. The Council on Education and Accreditation of the Canadian Dental Association has granted full approval of both the undergraduate and graduate programs in periodontics for a period of seven years to November 30, 1996. Responsibilities for the position include undergraduate and graduate teaching in periodontics and the further development of existing periodontal research. Candidates must have a proven record of teaching and research and be eligible for specialty certification in periodontics with the College of Dental Surgeons of British Columbia. One day per week is available for private practice.

The starting date is **September 1, 1995** or as soon as possible thereafter. Salary will be dependent on qualifications and is subject to final budgetary approval. The University of British Columbia welcomes all qualified applicants, especially women, aboriginal people, visible minorities and persons with disabilities. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada.

Candidates are requested to forward a letter of application (including the names and addresses of three referees whom the selection committee may contact) and a curriculum vitae prior to **July 1, 1995**. Applications or further enquiries should be directed to:



Dr. Alan A. Lowe, Professor and Head
Department of Clinical Dental Sciences
Faculty of Dentistry
The University of British Columbia
 2199 Wesbrook Mall
 Vancouver, B.C. V6T 1Z3
 Telephone: (604) 822-3414
 Fax: (604) 822-3562
 e-mail: alowe@unixg.ubc.ca



The University of Manitoba
Faculty of Dentistry

SECTION HEAD/ORTHODONTIC FACULTY POSITION

Applications are invited for one senior full-time, tenure-track position in the Department of Preventive Dental Science. Responsibilities will include the Headship of the Section of Orthodontics which includes Graduate and Undergraduate Orthodontics. Preferred areas of research expertise include physiology, biomechanics, connective tissue biology, facial growth and development, and dental materials. Didactic, preclinical and clinical teaching in the undergraduate and graduate orthodontic programs will be required.

CDA/ADA accredited orthodontic training and research experience are required. An advanced degree (minimum M.Sc.) is required. Private practice privilege extra-or intramurally is available one day per week. Academic rank and salary will be commensurate with qualifications and experience. Applicants must be eligible for dental licensure in Manitoba.

The University of Manitoba encourages applications from qualified women and men, including members of visible minorities, Aboriginal people, and persons with disabilities. The University offers a smoke-free environment, save for specially designated areas. Priority consideration will be given to Canadian citizens and permanent residents.

Letters of application, complete with curriculum vitae and the names and addresses of three references should be forwarded to:

Dr. J.N. Wright, Dean
D113 Dean's Office
780 Bannatyne Avenue
Winnipeg, Manitoba, Canada
R3E 0W2

Deadline for receipt of applications is AUGUST 1, 1995.

BRITISH COLUMBIA - Chilliwak: Associate desired to help take care of the patients in a beautiful family practice. Long-term commitment with partnership as a goal. Call Dr. Deborah A. Hallinan, Home: (604) 795-3077, Office: (604) 792-3324, or write: 102-9123 Mary Street, Chilliwak, B.C. V2P 4H7. (03/05)

BRITISH COLUMBIA - Penticton: Associate needed in the Spring of 1995 for a growing dental practice. Please reply to: Dr. Ronald A. Johnson, #109-1301 Main Street, Penticton, B.C. V2A 5E9. Phone: (604) 493-0020, Fax: (604) 493-1986. (03/05)

BRITISH COLUMBIA - Vancouver Area: A progressive fully computerized office in the beautiful Vancouver area is presently looking for an experienced dentist to work with our friendly, competent team. If you are interested in a long-term commitment with a future partnership agreement please call our office at (604) 931-7491. (05/07)

BRITISH COLUMBIA - Vancouver: Highly motivated dentist is seeking a full-time position in a quality dental practice located in Vancouver (with associateship or buy-in potential in the future). I am a young dynamic dentist with a pleasant personality and good clinical skills. I have obtained two years experience since I graduated from the University of Montreal. Please call or leave a message (418) 692-1723 or reply to CDA ACCESS Box # 2662. (03/05)

BRITISH COLUMBIA/ALBERTA: Experienced female dentist is looking for a full-time associateship anywhere in B.C. or Alberta, with possible future buy-in. Please call (306) 374-9692 or Fax (306) 244-5166. (04/05)

JUMP-START YOUR CAREER!

Become an associate at our busy dental office in beautiful Red Deer, Alberta. A tremendous learning experience, working with a great staff.

Call today
(403) 346-9122. (03/05)

ALBERTA - Calgary: Associate wanted to share dental space and expenses. Modern group practice, central location, preventive-oriented emergency

service, extended hours. Requires two dentists to purchase part of dental clinic and share expenses. Send C.V. to CDA ACCESS Box # 2663.

(03/05)

ALBERTA - Calgary: Dentist/specialist to share space part time or full time in modern computerized office. Prime downtown retail location, high pedestrian walk-by traffic. Owner working four days a week. Six operators, gross 500K a year. Call office (403) 265-2929, home (403) 686-2921. (04/06)

SASKATCHEWAN - Rosetown: Associate wanted. Excellent opportunity for a full-time associate to work with a well-established practice, part time in Rosetown and part time at a satellite practice in Eston. If you are a highly motivated dentist looking to work in a progressive environment (fully computerized, highly trained team members ...) away from the city (yet easily accessible to Saskatoon), we would like to hear from you. Buy-in potential exists for the right candidate. Please contact Dr. Glenn Riekman, Box 1690, Rosetown, SK S0L 2V0. Phone: office (306) 882-2123 or home (306) 882-2006. (02/05)

SASKATCHEWAN - Regina: Motivated progressive individual required for Dentrix computerized seven-operator practice in mall location. The successful candidate will provide quality full range services and be willing to work extended hours. Associateship progression to equity position possible for the right individual. Contact Dr. Francois Bourassa or Dr. Loreen Larson at (306) 789-2330 or write to: 332 University Park Drive, Regina, Saskatchewan S4V 0Y8. (05/07)

MANITOBA - Flin Flon: Associate wanted. Hawaii, Mexico, cruising in the Caribbean. A two week paid vacation is part of the benefit and experience that you will receive while working and enjoying life in a friendly general family practice, in a small community. Full clinical freedom. You may choose to stay forever or return to the South after a year or more with a padded account, having practiced where you were really needed — a good feeling. For further details please phone: Dr. Malcolm T.

Crozier, office (204) 687-4214, home (204) 687-5580, fax (204) 687-4833.

(05/06)

MANITOBA - Winnipeg: Full-time associate desired for a well established dental practice in West Kildonan, Winnipeg. Call (204) 334-1768. (04/06)

ONTARIO - Thunder Bay: Full-time associate wanted to start immediately in a combined general dentistry and anesthesia practice. All new equipment (under five years), with three to four ops, modern office. Skiing, fishing, hunting, camping, hiking etc. all within minutes of town. Please call (807) 683-5222 ask for Doug or Sue.

(03/05)

ONTARIO - Southwest Region:
Multi-Specialist Group Practice.
New facility Opening Fall 1995.

Requires periodontist and endodontist.

Part-time or full-time.

Partnership possibility.

Please contact M. Riley
(519) 623-6858 for details. (05/05)

ONTARIO - Sudbury: Seeking an experienced associate for my busy family practice. Expanded office hours will include evenings and Saturdays. For more information please contact Russell Knight c/o EXPEDIENT CONSULTANTS (905) 415-9767. (02/13)

ONTARIO - Sudbury: Associate wanted, full-time, for a busy modern well established practice. Potential for future partnership. Call (705) 523-5500. (05/07)

ONTARIO - Hamilton: Associate wanted. We are seeking an experienced, enthusiastic dentist interested in a long-term commitment in our practice (possibility of eventual buy-in). Practice is multi-disciplinary, preventive-oriented, very well organized by an excellent staff. Please reply to CDA ACCESS Box # 2673. (05/07)

DENTAL HYGIENIST

Experienced, motivated, currently working part-time, seeking full-time position only. Willing to relocate.

Please feel free to call Mary at
(705) 897-6086. (05/07)

ONTARIO - Scarborough ENDODONTIST REQUIRED

S.E. McCowan Road and Hwy. 401.
One day per week for progressive modern well established general practice with a concentrated focus on perio/prosthodontics.

(416) 296-1080 - Ask for Colette

Fax: (416) 296-1066. (04/06)

ONTARIO - WINDSOR

Wanted motivated conscientious associate to work with owner in a modern general practice.

(New facilities, flexible hours).

Bilingualism, family oriented and experience all beneficial. Progressive philosophy, superior staff, excellent growth potential. Reply to

CDA ACCESS Box # 2668. (04/13)

ONTARIO - WINDSOR

Oral Surgeon

Established oral and maxillofacial surgery practice seeking board eligible/certified oral surgeon for associateship leading to partnership.

Reply to Dr. Bernard Lyons
1368 Ouellette Ave.

Windsor, Ontario N8X 1J9. (04/06)

ONTARIO - Sudbury: Wanted associate/partner to join young solo dentist with two well established (7 and 15 year old) practices. Ideal for a recent grad. Excellent associate earning opportunity. Hospital privileges available. Possible transferral of an existing four-year government incentive grant. Please call (705) 522-4252. (04/05)

ONTARIO - Northwestern Region: Full-time associate needed for extremely busy general dental practice. Dentists and hygienists fully booked eight months in advance. High gross, high net, excellent staff and working conditions. Practice on American border in Northwestern Ontario. Please call (807) 274-5365, (807) 274-5549 evenings and weekends, or write to 1201 Colonization Road West, Fort Frances, Ontario P9A 2T6. (04/06)

QUEBEC - Gatineau: Recherche dentiste à pourcentage avec possibilité d'association future dans une clinique nouvellement réaménagée en plein centre-ville de Gatineau. Cette clinique est en opération depuis 11 ans, possède une clientèle établie et présente un fort potentiel de croissance. Contacter Joanne au (819) 568-3368. (05/05)

FOUNDING DEAN FACULTY OF DENTISTRY

Kuwait University takes pleasure in inviting candidates for the position of Dean of the College of Dentistry.

New Colleges of Dentistry and Pharmacy are currently in design phase by a consortium of internationally recognized architects from the United States and Kuwait. These new Colleges will join existing Colleges of Medicine and Allied Health Sciences and Nursing as integral parts of the University of Health Sciences Centre located on the Jabriyah campus which also includes the Mubarak Al-Kabeer Hospital, a major teaching and medical facility of the Ministry of Public Health.

The expected opening of these state-of-the-art Dental and Pharmacy Colleges is planned for the fall semester of 1998.

The position of Dean also carries the academic rank of Professor and candidates for these positions must meet and satisfy the criteria of Professor at the University of Kuwait. Additional requirements for the appointment include that applicants should possess a Ph.D. and/or equivalent in their special fields. The professional qualifications should include published research. A knowledge of Academic Management and administrative procedures at the Dean's level is preferred, a combined experience in higher education of 10-15 years, 3-4 of which as Professor.

The conditions of appointment:

Salary and benefits upon request.

Sixty (60) days paid annual leave, a paid conference each year, gratuity, furnished accommodation, electricity and water free of charge, free medical care. Free first class annual round trip air tickets from country of citizenship or permanent residence. Education for three (3) dependent children in Kuwait from elementary through high school. No taxation, and currency is transferable without restrictions.

Applicants should include a letter of intent, two (2) copies of their Curriculum Vitae, the names and addresses of three (3) references. Review of applications will begin immediately and continue until the position is filled.

Applications should be sent to:

**Dr. Basil Al-Nakhib
Professor and Vice President of Health Sciences
Kuwait University
P.O. Box 24923 Safat
131100 Kuwait, Arabian Gulf**

FACULTY POSITION AVAILABLE ORTHODONTIST

The Faculty of Dentistry, Dalhousie University, Halifax, Nova Scotia, is seeking applications for a full-time, tenure-track, or tenured faculty position in the Division of Orthodontics. Responsibilities include undergraduate didactic teaching, clinical and pre-clinical teaching, and research activity. Preference will be given to those candidates with an interest in clinical research in Orthodontics.

Applicants should have specialty training in Orthodontics with a M.S. or a Ph.D. degree, and be eligible for certification by the Royal College of Dentists or the American Board of Orthodontics. Preference will be given to applicants who are eligible for licensure in Nova Scotia.

Salary and rank will be commensurate with experience. One day per week of private practice privilege is available.

Dalhousie University is an Employment Equity/Affirmative Action Employer. The University encourages applications from qualified women, aboriginal peoples, visible minorities, and persons with disabilities.

In accordance with Canadian immigration requirements, preference will be given to Canadian citizens and permanent residents. Non-Canadians are also encouraged to apply. Preference will be given to applications received before May 31, 1995. Qualified candidates should submit a letter of application with their curriculum vitae and the names and addresses of three references to:

Dr. H.A. Lyttle
Chair, Search Committee
Office of the Dean
Faculty of Dentistry, Dalhousie University
Halifax, Nova Scotia
B3H 3J5

RHODE ISLAND, USA

- Rapidly growing High Tech Endodontic Practice is seeking a partner.
 - Incentive and student loan pay back a possibility in compensation package.
 - Two ocean-front offices will appeal to the water-sport enthusiast.
 - Sponsorship for work Visa available.
- Please fax cover letter and curriculum vitae to **(401) 946-3780**, if you would like to pursue this opportunity. (03/05)

Equipment Sales, Service

SASKATCHEWAN: Attention oral surgeons and orthodontists. I need your Axial-Tome 60. Call immediately (306) 463-4488 or fax (306) 463-4488. (12/05)



University of Otago

Te Whare Wananga o Otago

New Zealand

SENIOR LECTURER / LECTURER IN COMMUNITY DENTAL HEALTH

SCHOOL OF DENTISTRY

Applications are invited for a position within the Department of Community Dental Health.

The Department of Community Dental Health is responsible for teaching community dentistry, paediatric dentistry, public health dentistry, behavioural sciences and ethics to undergraduate and postgraduate students. The appointee will be expected to participate in research and teaching. Participation in children's dentistry clinical practice within the department would be desirable. Facilities for research are excellent in a wide range of disciplines. Opportunity exists for study for the higher degrees of Doctor of Dental Science or Doctor of Philosophy.

The Faculty has contractual links with Health Care Otago and the Southern Regional Health Authority developing innovative programmes in the delivery of oral health care.

The successful candidate will have appropriate postgraduate qualifications and experience in community dentistry / public health dentistry. The levels of appointment and salary will be dependent on qualifications and experience and will be within one of the following scales:

Senior Lecturer \$NZ67,808 - \$NZ87,568 (bar) p.a.

Lecturer \$NZ41,600 - \$NZ53,040 p.a.

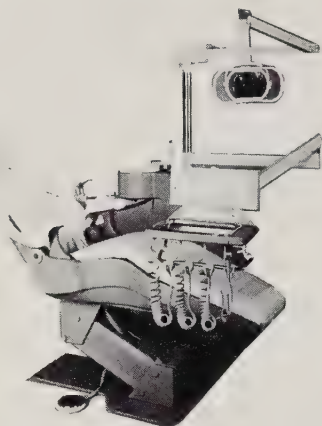
Intending applicants should write for further information to the Registrar, Dr D.W. Girvan, University of Otago, PO Box 56, Dunedin, New Zealand (Facsimile 64-3-474 1607). Informal enquiries about these posts are encouraged and should be addressed, on general matters, to Professor P.B. Innes, Dean of the Faculty of Dentistry; on the position, to Dr B.K. Drummond at the School of Dentistry, PO Box 647, Dunedin, New Zealand (Fax 64-3-479 0673) (Telephone: Professor Innes 64-3-479 7041, Dr Drummond 64-3-479 7113).

Applications quoting reference number A95/27 should be sent to the Registrar by 3 July 1995.

Equal opportunity in employment is University policy.

DANSEREAU HEALTH PRODUCTS

\$3995.00 (U.S.) COMPLETE OPERATORY



CALIFORNIA DENTAL CHAIR

With Adjustable Headrest
Automatic Return
5 Year Warranty
30 color choices

CALIFORNIA DELIVERY SYSTEM

3 Handpiece Automatic
Cuspidor with Cup Filler
and Assistants Package
includes an E-Z install Junction Box

CALIFORNIA DENTAL LIGHT

Chair Mounted Light
High and Low Settings

10-14 DAY DELIVERY
ON ALL EQUIPMENT

Proudly Made in the
U.S.A. for 32 Years

Dansereau Health Products Inc.
559 S. Rose St.
Anaheim, Ca. 92805
Ph# (800) 423-5657 U.S.A. and
Canada
Fax# (714) 776-4652

COMPLETE NEW DENTAL OFFICES AVAILABLE FOR \$418.86 (U.S.) PER MONTH.

ONTARIO - Lake Temagami

For sale, the ultimate in year-round comfort. Modern totally winterized retreat, three bedrooms, two bathrooms, Jacuzzi, 40 ft. living, dining room, pine cathedral ceiling, fully equipped kitchen, laundry room. Screened 40 x 10 ft. porch, fully furnished, two sleeping cabins, electric sauna at dock, three acres southwest exposure, two practice golf greens, 10 minutes from marina, \$450,000.

Serious inquiries to

P. Baines, Haldenstrasse 20,
CH 6006, Luzern, Switzerland.

Call (+ 41 41) 32-9119,

Fax: (+ 41 41) 32-9123. (04/05)

At last you have
a better way to access
the dental marketplace.

To place your
CDA ACCESS AD

Call
Neil McGillivray

at
(800) 661-5004
in Toronto call
(905) 278-6700.

Miscellaneous

TREK BAVARIA

15 days of HIKE, BIKE, RAFT and
sightSEE in BERCHTESGADEN

Sept. 9-23 1995 - CN \$2950

Discovery Canada:

Outdoor Adventure Inc.

Box 451, Kaslo, B.C. V0G 1M0

Tel: (604) 353-7349,

Fax: (604) 353-7559 (05/06)

FOR SALE IN EASTERN ONTARIO

Charming century home on three treed
acres in the Village of Elgin,
1/2 hour from Kingston, Brockville,
Smiths Falls — four bedrooms,
two baths, office.

Retired dentist's estate - \$165M.

(613) 832-1999. (05/06)



Pickering College

Day and boarding school from grade 4 to high school graduation

More than 150 years of caring education.

- strong academic programs
- full athletic program
- caring teachers
- accountability to parents
- modern facilities in a suburban setting
- close to the advantages of Metro Toronto

For further information, please contact:

Admissions Office
Pickering College
16945 Bayview Avenue
Newmarket, Ontario
Canada L3Y 4X2

Phone: (905) 895-1700 Fax: (905) 895-9076

(03/05)

A New Era in Posterior Composite Restorations



"A HIGHLY RECOMMENDED CLASS II TECHNIQUE"

— JOHN KANCA, III, DMD

Dr. Kanca is a graduate of the University of Connecticut and has a private practice in Middlebury, CT. with an emphasis on Cosmetic Dentistry. He is a founding member and past president of the American Academy of Cosmetic Dentistry. Dr. Kanca is recognized worldwide as one of the leading authorities on adhesive dentistry. Dr. Kanca is attributed with discovering the ability to bond to wet tooth structure as well as being the first to generate a gap-free restoration in-vivo. He is the recipient of the prestigious Hinman Medallion and more recently the Gordon Christensen Award, presented at the 1995 Chicago Mid-Winter Meeting.

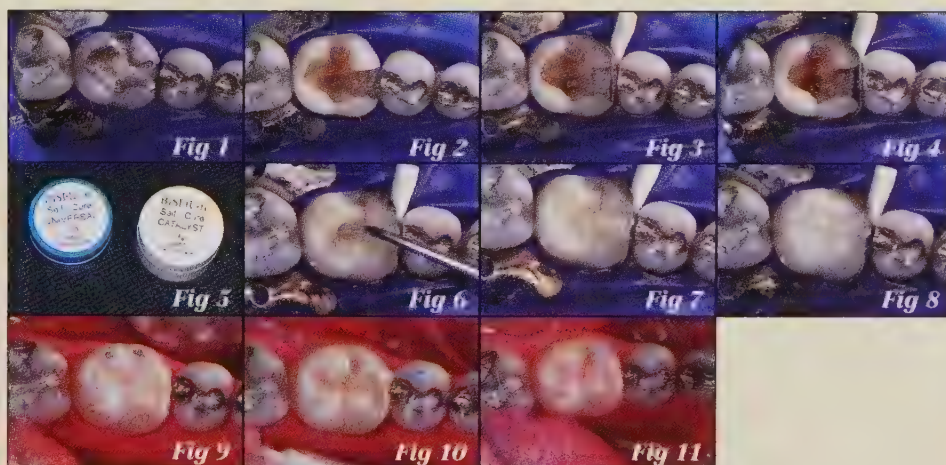
Two of the most common complaints as far as posterior composites are concerned are post-operative sensitivity and the failure to obtain good contacts. Post-operative sensitivity is due to gap formation, a frequent consequence of composite polymerization shrinkage exceeding the bond strength of the dental adhesive. If polymerization shrinkage force could be minimized, the chances for post-op comfort increases. One of the ways this can be done is with the utilization of a self-cure composite. The use of self-curing materials has long been the recommendation of Takao Fusayama of Japan, and has been continued by Ray Bertolotti. The following technique is an evolution of the prior techniques and offers advantages previously unavailable.

The tooth to be restored is properly isolated. (Fig 1) It is recommended that the tooth be pumiced while waiting for the anaesthesia. The preparation consists simply of removing the undesired material in the tooth. That is, only the old restoration

is removed and any unsupported enamel is allowed to remain. (Fig 2) The second and third significant items of need are the proper matrix and wedge. The recommended matrix is the Sectional Matrix Band and an Anatomic Wooden Wedge. The Anatomic Wedges are contoured concave in both a gingivo-incisal and bucco-lingual dimension. The Sectional Matrix is placed on either interproximal as indicated. (Fig 3) A wedge of proper size is selected and is inserted into the interproximal(s). With this technique severe wedging is not required - the wedges need only be tight. A high-bond strength dental adhesive, such as All Bond 2 from Bisco, is applied to the enamel and dentin. It is light-polymerized for 20 seconds. (Fig 4) Equal amounts of Base and Catalyst of Bis-Fil II are placed on a mixing pad. Bis-Fil II is a dense, viscous autocuring posterior composite. (Fig 5) The material is thoroughly mixed and then is delivered into the cavity preparation via a Centrix Syringe and High Viscosity Tip. Bis-Fil II has an

extremely interesting characteristic, it undergoes three distinct phases during polymerization. At first it is easily plastic in handling, but then it transforms into a rubbery type consistency. During this second phase the Bis-Fil II is condensable. (Fig 6) The material is condensed into the contact areas and the pulpal floor. A Clinician's Choice #1 is the recommended condensing instrument. This phase lasts 15-20 seconds. At the end of the second phase the material will become noticeably harder. At this point the condensing must stop, lest the composite break. The self-cure material is filled into the cavity such that it fills about 2/3 of the cavity preparation. (Fig 7)

A thin layer of unfilled bonding resin is applied to the hardened composite and a wear resistant light-cure composite (such as AeliteFil) is incrementally placed into the cavity prep until slightly overfilled. (Fig 8) Each increment should individually be light-polymerized. The matrix and wedges are then removed and the restoration is finished. It is recommended that a flexible disc be used to finish the excess that will be present in all four line angles. After the occlusion is properly adjusted (Fig 9), the restoration is etched briefly (3 sec), rinsed and dried. The composite surface sealant Fortify is then applied to the restoration. The Fortify is air-thinned, the embrasures are cleared with floss and then the restoration is light-polymerized for 30 seconds each from the facial, lingual and occlusal surfaces. The completed case is shown. (Fig 10) This technique could possibly make post-operative sensitivity a thing of the past. (Fig 11) shows the restoration at 1 year recall.



Bis-Fil II is manufactured by Bisco Dental Products, Itasca, IL. IN CANADA, ... for more information regarding this technique and associated products please contact BISCO DENTAL PRODUCTS CANADA (Western & Quebec Dentists) at 1-800-667-8811 or CLINICAL RESEARCH DENTAL (Ontario & Maritime Dentists) at 1-800-265-3444.

LISTERINE*

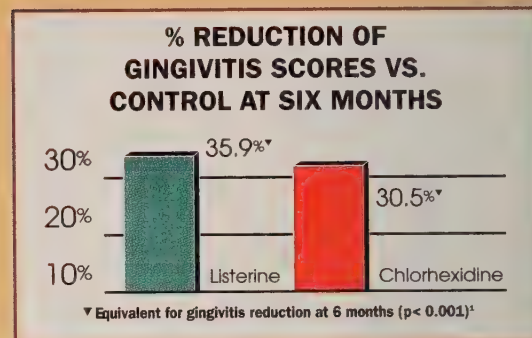
FIGHTS GINGIVITIS

AS EFFECTIVELY

AS CHLORHEXIDINE.



A recent clinical study¹ concluded that Listerine inhibited the development of gingivitis[†] as effectively as 0.12% chlorhexidine. In fact, Listerine reduced the development of gingivitis by almost 36% over brushing and flossing alone¹.



Unlike chlorhexidine, Listerine works without causing side effects like extrinsic tooth stain¹. Listerine is the only oral rinse, prescription or nonprescription, to receive

the Canadian Dental Association's seal of recognition for efficacy in the reduction of plaque and gingivitis².



Twice daily rinsing with Listerine works synergistically with brushing, flossing and your professional care¹. If you'd like to find out more about Listerine call 1-800-683-1650. We'll give you all the facts.



**LISTERINE FIGHTS GINGIVITIS
WITHOUT STAINING**

[†] "Listerine helps reduce gingivitis (minor inflammation of the gums caused by plaque above the gumline) when used in a conscientiously applied program of oral hygiene and dental care." CANADIAN DENTAL ASSOCIATION [†] Gingivitis was evaluated using the Modified Gingival Index. Listerine: Do not swallow. Not to be used by children under 12 years of age. Keep out of reach of children.

*TM Warner-Lambert Company Warner Wellcome Inc. use Scarborough, Ontario M1L 2N3

¹ Overholser CD et al. Comparative effects of two chemotherapeutic mouthrinses on the development of supragingival dental plaque and gingivitis. *J Clin Periodontol* 1990;17:575-579

² Data on file, 1995

dent



JOURNAL

of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

Vol. 61 No. 6

JUNE
JUN

1995

If undeliverable
to Addressee
RETURN TO SENDER
Return Postage

Not available

RETURNER'S
PORT PAID



DENTAL LIBRARY
UNIVERSITY OF TORONTO
124 EDWARD ST.
TORONTO M5G 1G6
ONTARIO, CANADA

Infection Control
Prévention de la contamination

What's so distinctive about Ash Temple service?

At Ash Temple, we recognize that when you need supplies, or your equipment malfunctions, you can't afford to wait. You need fast, efficient response.

That's why it's good to know you can rely on the people at Ash Temple.

Ash Temple's team of experts is composed of people who combine seasoned experience with the latest knowledge of industry developments.

Our service commitment is a combination of three important elements:

- An outstanding dedication to promptness and efficiency on the part of all our staff from coast-to-coast.
- A distribution infrastructure devoted

to providing consistent reliability with high order fill rates unrivalled in Canada.

- An enviable reputation earned over years of service to the Canadian dental profession.

Ash Temple can provide the service you require from within your local community.

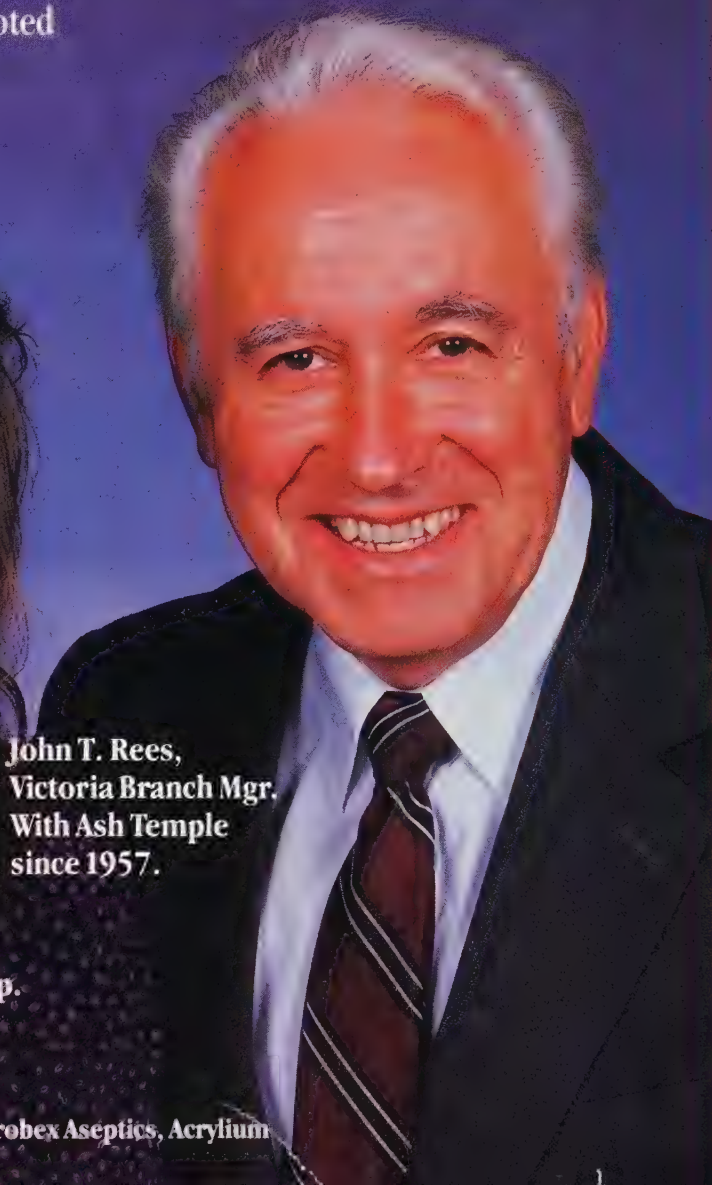
Call us. We're there when you need us.

**Ash
Temple**
LIMITED

Keeping you a step ahead.



Christine Park, Customer Service Rep.
With Ash Temple since 1986.



John T. Rees,
Victoria Branch Mgr.
With Ash Temple
since 1957.

ASH TEMPLE SERVICES:

Ash Temple has 14 strategically located, full-service depots —

Halifax
Saint John
Quebec
Montreal
Ottawa
Toronto
Hamilton
London
Winnipeg
Regina
Calgary
Edmonton
Vancouver
Victoria

In addition, there are sales and service staff located in 11 other communities across Canada.

All locations stock over 100,000 consumable items.

Ash Temple can assist you to —

- locate dental practice sites
- search for associates
- secure staff
- design your office
- help in selling your practice

Ash Temple's Equity Program allows you to set up a convenient schedule for delivery of supplies with a variety of payment options, volume discounts and rebate plans.

The annual Ash Temple Equity Grant supports dental associations and dental faculties of Canadian Universities.

The Ash Temple Companies —
Ash Temple Limited, Servident, A-Tech, Microbex Aseptics, Acrylium

CDA MISSION STATEMENT



"The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians."

SPECIALTY EDITORS

Endodontics

Dr. W. H. (Bill) Christie

Oral and Maxillofacial Surgery

Dr. David S. Precious

Oral Pathology

Dr. James H. P. Main

Orthodontics

Dr. Kenneth E. Glover

Pediatric Dentistry

Dr. Victor Legault

Periodontics

Dr. James E. (Jim) Stakiw

Prosthodontics

Dr. Michael MacEntee

Public Health

Dr. Donald Lewis

Radiology

Dr. Robert E. Wood

CONSULTING EDITORS

Anesthesiology

Dr. Earle Young

Dental Materials

Dr. Peter T. Williams

Medicine

Dr. George K.B. Sandor

Pharmacology

Ms. Helen Grad

Forensic Dentistry

Dr. Robert Dorion

Infection Control

Dr. Joel Epstein

Practice Management

Dr. Bob Brandon

Cosmetic Dentistry

Dr. Ken Neuman

Nutrition

Mrs. Nina Burgess

Canadian Dental Hygienists Association

Ms. Carol Matheson Worobey

Canadian Dental Assistants Association

Ms. Charlotte Peer-Miller

CDA EXECUTIVE COUNCIL

President

Dr. Bryun Sigfstead
Edmonton, Alberta

President-Elect

Dr. James Brookfield
Kirkland Lake, Ontario

Vice-President

Dr. Barry Dolman
Montreal, Quebec

Dr. John Diggins
Vancouver, B.C.

Dr. Toby Gushue

St. John's, Nfld.

Dr. Richard D. Sandilands
Edmonton, Alberta

Dr. David Somer
Hamilton, Ontario

Dr. Tom Breneman
Brandon, Manitoba

Dr. Louis Dubé
Sherbrooke, Quebec

CDA STAFF

EXECUTIVE

DIRECTOR'S OFFICE

Executive Director

A. Jardine Neilson

CORPORATE AFFAIRS

Manager, Corporate Affairs

Sandra Davis

Coordinator,
Board and Executive
Suzanne Burton

PROFESSIONAL SERVICES

Director, Education and
Accreditation/Professional
Services

Brian Henderson

Associate Director,
Education and Accreditation
Susan Matheson

Coordinator, Education and
Accreditation

Gay MacQuarrie

Coordinator, DAT/CID

Danuta Askew

Coordinator, Purchaser Information Program, CDAnet
Patricia Drake

COMMUNICATIONS

Director of Communications

Linda Teteruck

Librarian

Martha Vaughan

Manager, Membership
Services

Carol Anne Deneka

Manager, Information Services
Lisa Burke

ADMINISTRATION

Director of Administration

Joel R. Neal

Manager, Human Resources

Tefiro Kyeyune

Secretary, Membership
Lydia Allison

JOURNAL

Published monthly by the Canadian Dental Association at 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6. Copyright 1982 by the Canadian Dental Association. Authorized as Second Class Mail, Registration Number 5384. Postage paid at Ottawa, Ont.

Subscriptions: All subscriptions payable in advance in Canadian funds. In Canada — \$48 (+ GST); United States — \$53; all other — \$58.

Subscriptions are for 12 issues, not necessarily conforming with the calendar year.

Notice of change of address should be received before the 10th of the month, to become effective the following month.

Member:

American Dental Editors' Association
Canadian Circulations Audit Board

Call CDA for information and assistance toll-free at:

1-800-267-6354

CDA Fax No.: 1-613-523-7736

All matters pertaining to advertising should be directed to:

Keith Health Care Communications
1382 Hurontario Street
Mississauga, Ont.
L5G 3H4

Attn: Ms. Janet Duffield,
Sales Representative, or,
Mr. Neil McGillivray, CDA Access Representative

Tel.: (905) 278-6700

Fax: (905) 278-4850

JOURNAL

June/
Juin
1995
Vol. 61
No. 6



THE MOST ACCURATE IMPRESSIONS... With Just A Touch!

ESPE PENTAMIX® will revolutionize
your impression mixing.

- ◆ Saves time, providing you with a void-free mix every time.
- ◆ Easy to use. You even have extended working time.
- ◆ Ideal for the asepsis oriented practice, eliminates potential cross contamination.



*The tray and syringe are loaded in seconds.
There is virtually no waste and no clean up.*

New!
ESPE PENTAMIX®
AUTOMATIC MIXER FOR IMPREGUM®
Send for a free video.

* Pentamix is a registered trademark of ESPE Dental-Medizin GmbH & Co. KG, Germany
* Impregum is a registered trademark of Premier Dental Products Co.

ESPE Canada • 480 Hood Road, Unit 3 • Markham, Ontario L3R 9Z3 • 800-465-8455

JOURNAL

CANADIAN DENTAL ASSOCIATION/
L'ASSOCIATION DENTAIRE CANADIENNE

JUNE/JUIN 1995
VOL. 61, NO. 6

Executive Director
A. Jardine Neilson

Editor
Dr. P. Ralph Crawford

Managing Editor
Terence Davis

Researcher
Antonia Papadakou

*Coordinator, production
& desktop services*
Michelle Walters

Circulation Secretary
Rachel Galipeau

Scientific Editor (English)
Dr. Robert S. Turnbull

Scientific Editor (French)
Dr. Pierre C. Desautels

All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association. The editor reserves the right to edit all copy submitted to the *Journal*. Publication of an advertisement does not necessarily imply that the Canadian Dental Association agrees with or supports the claims therein.

The *Journal of the Canadian Dental Association* is published in both official languages, except scientific articles, which are published in the language in which they are received. Readers may request the *Journal* in the language of their choice.

ISSN 0709 8936
PRINTED IN CANADA

INFECTION CONTROL



487 The Law and Ethics In Relation To Dentists Treating HIV-Positive Patients: Two Recent Court Cases

Peter E. Graham, BA, BCL, QC
Norman M. Miller, B.Sc., DDS
Mili Harel-Raviv, DMD, Dip. Oral Med.

492 Dentistry and Tuberculosis In the 1900s

P.D. Riben, MD, M.H.Sc., FRCPC
J.B. Epstein, DMD, MSD
R.G. Mathias, MD, FRCPC

509 CDA Recommendations For Infection Control Procedures

(Approved by the CDA board of governors, 1992)

511 Contaminated Toothbrushes and Their Disinfection

S.D. Caudry, B.Sc., PhD, DDS
A. Klitorinos, B.Sc., M.Sc.
E.C.S. Chan, BA, MS, PhD

519 Survey To Assess Dental Practitioner's Knowledge Of Infectious Disease

Joel B. Epstein, DMD, MSD
Rick G. Mathias, MD, FRCP(C)
Gary B. Gibson, DDS

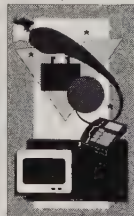
526 Compliance To Recommended Infection Control Procedures: Changes Over Six Years Among British Columbia Dentists

Gary B. Gibson, DDS
Richard Mathias, MD, FRCD(C)
Joel B. Epstein, DMD, MSD

537 Hepatitis C: What a Dentist Should Know

Karl Weiss, MD, CSPQ, FRCP(C)

DEPARTMENTS



466 Meetings and Courses

469 Editorial

471 President's Column

472 Letters To the Editor

474 News Update

477 Book Reviews

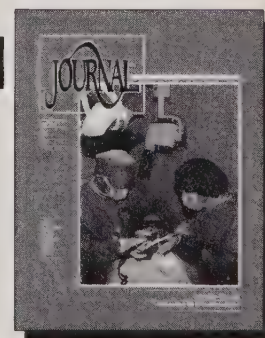
480 Let's Talk

483 Practice Management and Success

499 CDA Convention

541 CDA Access Ads

546 Advertisers' Index



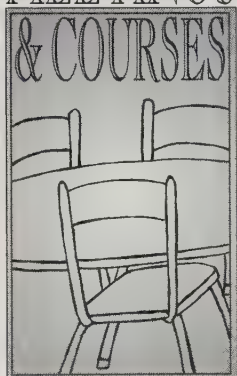
Cover: Infection Control (Photograph Courtesy of Dr. Walter Pelech).

JOURNAL

June/
Juin
1995
Vol. 61
No. 6

465

MEETINGS & COURSES



INTERNATIONAL



June 28 - July 1

Third Endodontic World Congress sponsored by the International Federation of Endodontic Associations and organized by the Società Italiana di Endodonzia will be held in Rome, Italy. For more information contact: IFAE - SIE Viale Ippocrate, 97 - 00161, Roma, Italia. Tel.: 39 6 4469955, or fax: 39 6 4457464.

June 28 - July 1

International Association for Dental Research — 73rd General Session and Exhibition to be held in Singapore. For more information contact: E. Gwynn Breckenridge, Director of Scientific Meetings, 1111 Fourteenth Street N.W., Suite 1000, Washington, D.C. 20005, U.S.A. Tel: (202) 898-1050, or fax: (202) 789-1033.

June 29 - July 3

XII International Congress on Oral & Maxillofacial Surgery to be held in Budapest, Hungary. For more information contact: Prof. G. Szabo, Dept. of Oral & Maxillofacial Surgery, Semmelweis University of Medicine, H-Budapest VII, Maria U. 52, Hungary.

August 23-26

XV World Congress — International Congress of Oral Implantologists to be held in San Francisco, Calif. For more information contact: R. Craig Johnson, 248 Lorraine Ave., Upper Montclair, N.J. 07043, U.S.A. Tel.: (201) 783-6300, or fax: (201) 783-1175.

August 26-27

Annual Meeting and Convocation of the International College of Dentists to be held at the Chateau Laurier in Ottawa, Ont. For information contact Dr. Wm. Spence, Registrar; 12A Yonge Blvd, Suite 1, Toronto, Ont. M5M 3G5; Tel/Fax (416) 487-2928.

October 23-27

83rd FDI Annual World Dental Congress to be held in Hong Kong. For information contact: Laura Stephenson (613) 523-1770 ext. 246.

October 31 - November 4

Centenary Congress — 28th International Dental Meeting to be held in Buenos Aires, Argentina and sponsored by the Asociación Odontológica Argentina. For more information contact: Dr. Guillermo Pisarenko, president, Junin 959, (1113) Buenos Aires, Argentina. Tel: (1) 961-6141, or fax: (1) 961-1110.

November 15-17

Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00, or fax: (8) 662 58 42.

CANADA



August 26-29

Canadian Dental Association 1995 Convention to be held at the Ottawa Congress Centre in Ottawa, Ont. Scientific sessions, exhibit hall, social events, special activities, spouse's program and children's program. For more information contact: Laura Stephenson, CDA Conventions, 1-800-267-6354.

August 28

RCDA — Attention All RCDC/CFDS Personnel — 80th Anniversary "Meet and Greet," to be held at the Chateau Laurier Hotel at 5 p.m. For further information contact: Captain W.S. MacKenzie, (416) 488-9735, or fax (416) 932-1994.

September 8-9

The University of Western Ontario's faculty of dentistry presents The Mus-

tang Dental Symposium. Two days of clinically relevant education — two simultaneous programs — more than 30 speakers, to be held at the Radisson Hotel in London, Ont. For further information contact: Ms. Najet Hassan, Continuing Dental Education, Faculty of Dentistry, Room 1003, Dental Sciences Building, London, Ont. N6A 5C1. Tel.: (519) 661-3902, or fax (519) 661-3875.

September 13-17

31st Annual Meeting of the Canadian Academy of Endodontics to be held at the Westin Hotel, Ottawa, Ont. For information contact: Dr. William J. Kost (519) 672-4611, or Dr. George Citrone (613) 238-2463.

September 14-16

Canadian Association of Orthodontists — Annual Scientific Session to be held at the Chateau Laurier Hotel in Ottawa, Ont. For more information contact the Canadian Association of Orthodontists at (416) 491-3186, or fax (416) 491-1670.

September 14-16

Canadian Academy of Restorative Dentistry and Prosthodontics is holding its scientific session in Toronto, Ont. at the Four Seasons Hotel. For more information contact: Dr. Jeff Martin, 1995 Convention Registrar, 90 Eglinton Ave. W., Suite 111, Toronto, Ont. M4R 2E4, or call (416) 488-7914.

September 15-17

Canadian Academy of Pediatric Dentistry/Académie canadienne de dentisterie pédiatrique, Annual meeting/Congrès Annuel to be held at the Sheraton Centre, Montreal, Que. For more information please contact: Dr. L.-R. Charette, 3550 Côte-des-Neiges, Suite G-80, Montreal, Que. H3H 1V4. Tel.: (514) 931-1155.

October 11-14

6th Annual Conference of the Canadian Association for Suicide Prevention (CASP)/6^e Congrès annuel de l'Association canadienne pour la prévention du suicide (ACPS) to be held in Banff, Alta. The theme of this conference is Building Connections for Suicide Prevention. For more information contact the Canadian Association of Suicide Prevention, c/o Suicide Information & Education Centre, 201-1615 10th Ave. S.W., Calgary, Alta.

T3C 0J7. Tel.: (403) 245-3900, or fax: (403) 245-0299.

October 20

The University of Western Ontario's faculty of dentistry presents Dental Materials Review and Update. For information contact the UWO, Faculty of Dentistry, Room 1003, Dental Sciences Building, London, Ont. N6A 5C1. Tel.: (519) 661-3902, or fax (519) 661-3875.

October 20-21

Southern Ontario Surgical Orthodontic Study Group Meeting to be held in Windsor, Ont. For details contact Dr. Jeff Berger (519) 258-2632, or fax: (519) 258-2637.

October 20-22

21st Century Ceramics Symposium to be held in Vancouver, B.C. For more information contact: Ms. Mary Thomas, Vancouver Seminar for Dentistry, 280-7580 River Rd., Richmond, B.C. V6X 1X6. Tel.: (604) 278-5426, or fax: (604) 278-6864.

October 26-27

Bridging Communities, Building Futures, 24th Annual Scientific and Educational Meeting of the Canadian Association of Gerontology to be held at the Hyatt Regency Hotel, Vancouver, B.C. For registration information please write to: Conference Secretariat, c/o Gerontology Research Centre, Simon Fraser University, 515 W. Hastings, Suite 2800, Vancouver, B.C. V3B 5K3. Tel.: (604) 291-5062, or fax: (604) 291-5066.

October 27-28

The University of Western Ontario's faculty of dentistry presents Guiding the Developing Dentition. Guest speaker: Dr. Jon T. Kapala. For information contact the UWO, Faculty of Dentistry, Room 1003, Dental Sciences Building, London, Ont. N6A 5C1. Tel.: (519) 661-3902, or fax (519) 661-3875.

October 27-29

Workshop Meeting of the Canadian Association of Dental Consultants to be held in Toronto, Ont. For information contact: Dr. W. Norgate, 901 St. Mary's Rd., Winnipeg, Man. R2M 3R4.

November 4

The University of Western Ontario's faculty of dentistry presents Oral Pathology and Panoramic Radiology. For information contact the UWO,

Faculty of Dentistry, Room 1003, Dental Sciences Building, London, Ont. N6A 5C1. Tel.: (519) 661-3902, or fax (519) 661-3875.

U.S.A.



November 30 - December 2

The University of Western Ontario's faculty of dentistry presents Crown and Bridge Back to Basics. For information contact the UWO, Faculty of Dentistry, Room 1003, Dental Sciences Building, London, Ont. N6A 5C1. Tel.: (519) 661-3902, or fax (519) 661-3875.

September 15-16

The American Dental Association, Michigan Dental Association and West Michigan Dental Society are proud to celebrate during 1995 the **50th Anniversary of Community Water Fluoridation in the United States.** An international symposium on community water fluoridation will be held at the Van Audel Center in Grand Rapids, Mich. For more information contact: Dr. Arnold Morawa or Ms. Debbie Montague, University of Michigan School of Dentistry, 1011 N. University Ave., Ann Arbor, Mich. 48109-1078. Tel: (313) 764-6856, or fax: (313) 936-3065.

October 4-6

58th Annual Meeting of The American Association of Public Health Dentistry — Call for Abstracts. The AAPHD is inviting papers on a broad range of dental public health topics for presentation at its annual meeting. The theme of this year's meeting is "Oral Health: The Primary Care and Prevention Model." Deadline for submission is May 1, 1995. For further information contact AAPHD National office, 10619 Jousting Lane, Richmond, Va. 23235-2828. Tel: (804) 272-8344, or fax: (804) 272-0802.

October 7-11

136th Annual Session of the American Dental Association to be held in Las Vegas, Nev. For more information contact the American Dental Association, 211 E. Chicago Ave., Chicago, Ill., 60611, U.S.A. Tel.: (312) 440-2658, or fax: (312) 440-2707.

November 27-28

American Board of Oral and Maxillofacial Radiology 1995 — Certifying Examination. Applications must be submitted by May 15, 1995. For further information please contact Dr. Curtis Lundeen, School of Dentistry — Oral Radiology, Oregon Health Sciences University, 611 S.W. Campus Dr., Portland, Ore. 97201-3097. Tel: (503) 494-8930.

DENTAL MEETINGS



August 25-26

Annual Meeting of the CDA Board of Governors to be held in Ottawa, Ont. Contact: Suzanne Burton (613) 523-1770, ext. 201, or 1-800-267-6354.

August 26-29

CDA 1995 Convention to be held in Ottawa, Ont. at the Ottawa Congress Centre. Contact: Laura Stephenson (613) 523-1770, ext. 246, or 1-800-267-6354.

Notices of meetings and continuing education courses are published without charge for appropriate **not-for-profit** dental organizations, teaching facilities or recognized study clubs. Information must be received two months prior to expected publication date, and will be published at the discretion of the editor. Send all requests C/O Ms. Rachel Galipeau, *Journal* circulation secretary, Canadian Dental Association, 1815 Alta Vista Dr., Ottawa, Ont. K1G 3Y6.

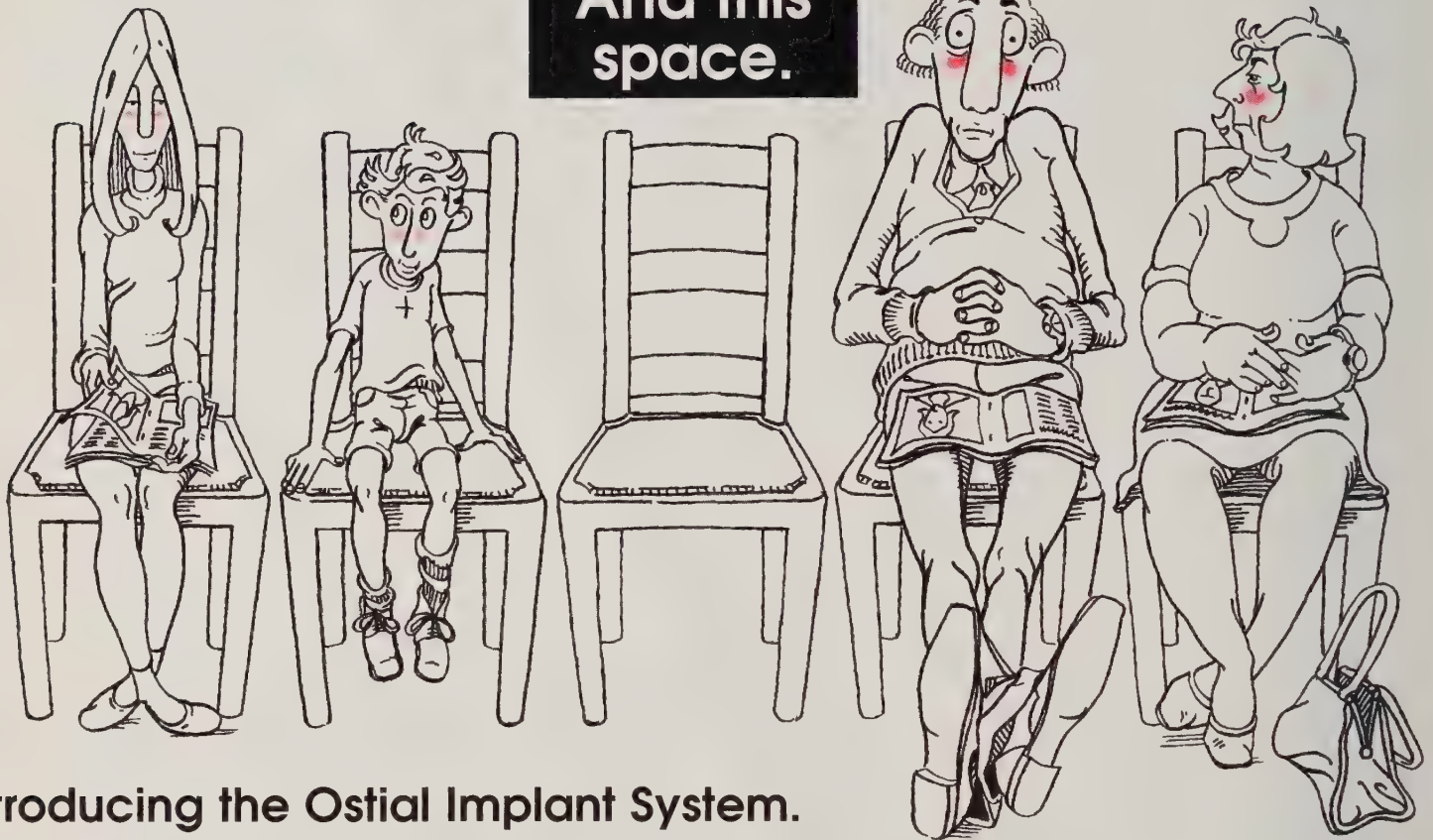


June/
Juin
1995
Vol. 61
No. 6

At last, an affordable, uncomplicated implant system to help you fill this space.



And this
space.



Introducing the Ostial Implant System.

Hoechst-Roussel Canada is pleased to introduce Ostial, an affordable, innovative new implant system.

The Ostial Implant has a conical shape for optimum load distribution and a coarse thread design for ease of placement.

Ostial was developed here in Canada and its design is patented*. Training courses will be offered in selected centres and will qualify for Continuing Education credit points**.

For more information, call Michiel Verburg, Product Manager, at 1-800-363-1871 ext.3712 or contact your Hoechst-Roussel representative.

Ostial *Simple.
Affordable.
Innovative.*

Hoechst-Roussel Canada Inc.

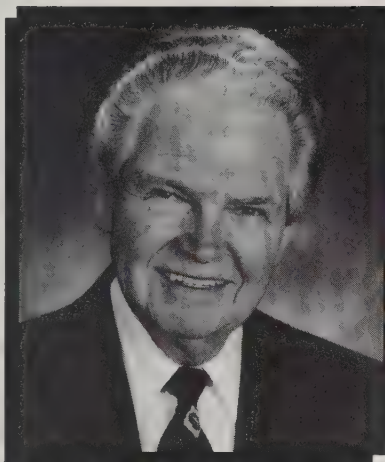
*Canadian patent #1248371 issued.

**For an up-to-date listing, contact HRCI.

The successful outcome of any implant procedure is directly related to proper surgical and prosthetic technique.

EDITORIAL

STERILIZATION — YESTERDAY, TODAY, AND TOMORROW



Dr. P. Ralph Crawford,
Editor

In today's world, where change occurs in the blink of an eye, it's easy to forget what happened yesterday let alone what happened 100 years ago.

This is truly unfortunate. The past not only holds valuable lessons, but as Douglas Guthrie so eloquently stated in 1949: "History is the basic of all human progress. Unless we know what has already been done, we shall simply repeat and perpetuate the mistakes of our ancestors, and add nothing to the sum of achievement."

Perhaps it's my passion for dental history, but I agree wholeheartedly with Mr. Guthrie's analysis. I honestly believe that if we are to rationally determine infection control's place in dentistry today, for example, and logically plan the dental operatories of tomorrow, we have an obligation to reflect on the struggles of the past.

Modern infection control is a relatively new phenomenon by historical standards. It probably had its beginnings in 1847, when Ignaz Semmelweis determined that puerperal fever, which then claimed the lives of thousands of new mothers, was caused by "putrid material" that was carried from the dissecting room to hospital

bedsides on the hands of medical students. Despite knowing nothing of Pasteur's micro-organisms, the Hungarian physician insisted that students wash their hands in chloride of lime solution.

Another 20 years would pass before Lister saved the limb of an 11 year old Glasgow boy by washing the wound in carbolic acid and applying a dressing soaked in the same solution. And it wasn't until 1886 that Dr. Gustav Neuber, in his *Die Aseptische Wundbehandlung*, stated that all instruments and accessories should be sterilized by boiling, and then placed in carbolic acid solution.

Change does not always come quickly, however. As a new graduate in 1964 — 78 years after Neuber published his famous text — I associated with a Winnipeg dentist. He was an excellent clinician of impeccable character, but he was still sterilizing his surgical instruments in boiling water and dispensing local anesthetic from multiple-dose bottles with re-usable needles. It took a lot of persuasion, and more than one serious discussion on sterilization, before I could convince him to purchase an autoclave, anesthetic carpules, and disposable needles.

But then, it had only been 100 years since Ernst von Bergmann of Berlin first developed his germ-free operating theatres — combining metal furniture that could be thoroughly cleaned with the use of steam to sterilize towels, gowns and dressings. In fact, all of the standard infection control barriers in use today — such as masks, gowns, eyewear and latex gloves — are fairly recent innovations.

Rubber gloves were worn for the first time during surgery at John Hopkins Hospital in the late 1890s, although the event had little to do with sterility. It actually occurred because the nurse in charge of the operating theatre had complained that mercuric chloride antiseptic solution caused dermatitis. The use of sterile gowns and caps did not become universal until the turn of the century, and masks were not introduced until about 1906.

When you consider how infection control practices have changed over the last 10 years, particularly in dentistry, many questions come to mind. Would there have been such rapid change in today's sterilization routines without AIDS? Would AIDS have ever evoked such worldwide terror if its transmission wasn't associated with homosexuality, illicit sex, and the exchange of dirty needles between drug users? Would it have been any different if no one had ever heard of Dr. David Acer and the cluster of unfortunates who ostensibly acquired HIV in his dental office?

We'll never know all the answers. But I can tell you that it does little good to worry, fret or panic about the way things are. Progress is not accomplished by knee-jerk reactions to every sensational newspaper headline or TV commentary. Nor is it achieved by listening to the rantings of the pseudo-scientific zealot looking for a platform.

I would find no comfort or assurance in legislators and bureaucrats laying down edicts and statutes on how we should practise dentistry and sterilize our instruments. My faith lies in the leadership of organized dentistry — our associations and licensing bodies — to do what is right.

Progress is only achieved when change is based on sound research conducted according to the best scientific principles. It means weighing the pros and cons, and acting in the best interests of our patients. And it means seeking the truth.

Lord Lister set the right course for us in his 1876 address to a graduating medical class: "When I was a little boy, I used to imagine that prejudice was a thing peculiar to some individuals. But, alas! I have since learned that we are all under its influence, and that is only a question of degree. But let us ever contest against it; and remembering that the glorious truth is always present, let us strive patiently and humbly to discover it."

P. Ralph Crawford, BA, DMD
Editor of the Journal of the
Canadian Dental Association

JOURNAL

June/
Juin
1995
Vol. 61
No. 6

How Will You Spend The Money You Save On Travel Insurance?

Imagine being handed extra vacation money to spend on something special. Hot air ballooning ... an evening cruise ... whatever you wish.

That's what it's like when you save money by purchasing Travel Insurance from the Canadian Dentists' Insurance Program. Chances are, you'll pay far less than what you'd pay elsewhere.

And the plan is first class all the way. Providing comprehensive coverage for medical emergencies anywhere around the world. Plus helpful extras – like 24-hour phone service for hospital information when trip planning, emergency medical advice while travelling, and much more.

Convenient Year-Round Coverage

You pay one low annual premium, and you're covered for an unlimited number of trips all year. So you end the hassle of buying insurance every time you travel.

Compare this plan with the rest. The cost to cover all your trips for a year is about the same as many other plans' coverage for a single trip. And this plan includes Canada-wide coverage, unlike most credit card travel insurance.

So call CDSPI – and take travel insurance savings to new heights.

Available in participating provinces.



CDSPI



CANADIAN
DENTAL
ASSOCIATION
L'ASSOCIATION
DENTAIRE
CANADIENNE

Canadian Dental Service Plans Inc.
100 Consilium Place, Suite 710
Scarborough, Ontario M1H 3G8

Toll-free 1-800-561-9401

Metro Toronto (416) 296-9401

Western Provinces ext. 236

Ontario ext. 238

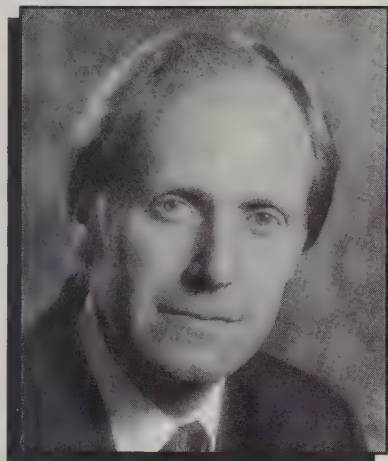
Quebec & Atlantic Provinces ext. 234

**FINANCIAL PROGRAMS
DESIGNED BY DENTISTS
FOR DENTISTS**



PRESIDENT'S COLUMN

CONTINUING EDUCATION — A PROFESSIONAL RESPONSIBILITY



Dr. Bryun Sigfstead,
President

If you think your office is being bombarded with literature on new continuing education offerings, you're not alone. With the introduction of mandatory continuing education credits as a condition of licensure in Canada, the number of available courses has increased almost exponentially.

Both the requirement for continuing education and the proliferation of new courses have been viewed with mixed feelings by Canadian dentists. Those opposed to mandatory continuing education say that you can't force people to learn, no matter how often you lead them to the well. In contrast, the proponents see continuing education and learning as a professional responsibility, and welcome any opportunity to incorporate the latest technology and methods into their practices. They honestly believe that continuous learning benefits both themselves and their patients.

I can't speak for every dentist, but based on my personal experience, four years of undergraduate training and two years of specialty training didn't teach me everything there is to know about dentistry. In fact, I spent the first few days of my

professional life in a state of near shock. Despite all the time I'd spent in the faculty dental clinic, and despite all those hours of instruction, more than one of my patients presented with a problem I'd never seen before.

This isn't to say that my undergraduate training was inadequate. It just means that dentistry incorporates a huge body of knowledge, and there's simply no way that anyone can amass all of it in four or five years.

In reality, as much as my undergraduate training gave me the tools I needed to practise my profession, it also prepared me to embark on a path of continuous learning. And in today's fast-paced world, it's the only path to follow.

As the saying goes, the only constant in our world is change. And whether we like it or not, that change is occurring remarkably quickly. The amount of information available to mankind now doubles every five years. Soon, thanks to even newer and faster computers, it will be doubling every four years.

Back in Shakespeare's day, the English language contained approximately 100,000 usable words. Today there are 500,000. It would be naive to suggest, or even think, that similar changes have not occurred in dentistry, or that the amount of knowledge that exists in our profession has not increased dramatically during the last decade. This puts a whole new perspective on "keeping up."

The increase in available information puts new demands on both our teaching institutions and ourselves. Our schools must continually teach new concepts and techniques, at the same time as they ensure that graduating students are well-grounded in the basics. And we, as caring professionals, are faced with the prospect of continually updating our old skills and learning how to use new techniques and equipment, while maintaining a workable day-to-day practice routine. The alternative is to be left behind, and that's a problem.

When our patients come to us for dental care, they expect us to

provide them with the best available materials using the most modern techniques. If we can't provide these services, patients expect to be referred to another dentist, or they'll likely find one for themselves. It behooves us, to say the least, to not only understand and be able to speak knowledgeably about the latest advances in dentistry, but also to be able to use them when it's appropriate to do so.

In most cases, the continuing education demands placed on us by our licensing bodies are not onerous. We should accept them as a requirement of practising our chosen profession, and recognize that they are part of our ongoing responsibility to provide the public with good advice and competent service.

CDA is actively involved in providing continuing education opportunities to the dental profession, not only through our New Directions seminar series, but also through our Taking Care of Business program, our tax seminars and the *Journal*. Then there's CDA's annual convention. Once a year, it brings together the world's leading clinicians to Canada to provide dentists with the most varied, most complete, and biggest continuing education event of the year. It's an opportunity for dentists from across the country to access hands-on clinics, seminars and lectures on all the latest advances in dentistry, as well as to meet and talk to their colleagues.

This year, our national convention will take place in Ottawa August 26-29. Not only will it be the continuing education event of the year, it will also be the place for the dental industry to show you their most recent advances.

As you put together your itinerary for 1995, I encourage you to make a stop in Ottawa part of your travel plans. All of us at CDA look forward to seeing you in our nation's capital this summer.

Bryun Sigfstead, DDS
President of the Canadian Dental Association

JOURNAL

June/
Juin
1995
Vol. 61
No. 6

LETTERS



Did You Know

I particularly enjoy the editorials and letters from readers that appear in the *Journal*. Both provide some insight to the differing perspectives within our profession, and the *Journal* helps me to stay current with new technologies and procedures. It is encouraging to read the many practice management articles that promote team building and collaborative management.

I do want to express my concern regarding a "Did You Know" filler that appears often in the *Journal*, however. This particular filler refers to employee benefits growing faster than practice earnings. There is no disputing the facts — the statement is most likely accurate. In my view, however, the filler is conveying a negative message to dentist employers. It may be perceived that employee benefits are the major cause of increased overhead and a justifiable method of reducing overhead.

Many dentists appreciate the advantages of retaining loyal, satisfied and qualified employees and, conversely, avoiding the related costs of staff turnover. The key to maintaining a great team is ensuring a positive working environment, along with appropriate compensation; benefits being a part of that compensation.

Perhaps future fillers addressing employee benefits could look to their positive effects to the practice economy and harmony; rather than the negative.

Marlene Robinson, CDA
Manager of Members Services/
Certified Dental Assistants
College of Dental Surgeons
of British Columbia

Maxillary Nerve Block

In regard to "Maxillary Nerve Block" in the April issue (Nish, I.A., Pynn, B.R., Holmes, H.I., et al. Maxillary Nerve Block: A Case Report and Review of the Intraoral Technique. *J Can Dent Assoc* 61(4):305-310, 1995.), I cannot argue with the authors' conclusion. I do, however, strongly disagree with its use in the case report they present.

A conservative approach consisting of an I&D simply using a mucosal wheal for local anesthesia; changing to appropriate antibiotic coverage; supportive local and systemic measures; and allowing the patient's acute symptoms to subside prior to a possible surgical removal of the infected tooth using the standard anesthetic technique would better serve the oral surgeon, the general dentist and especially the patient.

I, as an oral surgeon, would neither wish to be subjected to this treatment, nor would I administer it to a patient in the state shown, and would certainly not advocate that a general dentist follow this example.

Gary L. Freedman, DDS, MSD,
FRCD(C), Dip. ABOMFS
Montreal, Quebec

Author's Response:

Dr. Freedman's comments lead me to believe that he has some particular anxieties related to this technique. Maxillary nerve block via the greater palatine canal is safe and easy to administer, relatively free of complications, and less painful to receive than the standard inferior alveolar nerve block administered at many routine dental appointments. Once the canal has been accessed, many patients are unaware of injection until tissue anesthesia begins.

By this approach, we achieve profound anesthesia of the entire hemi-maxilla without injecting through infected tissue. This provided a considerable measure of analgesia for the patient. In addition, the excellent anesthesia allowed full, painless exploration of the canine space, placement of a

penrose drain to ensure optimal drainage, and extraction of the offending tooth, all with a single injection.

As stated in the article, the success rate of this injection compares favorably with the standard inferior alveolar nerve block. The "mucosal wheal" suggested by Dr. Freedman would not provide any analgesia, and likely only poor anesthesia because of the relative acidity of infected tissues. By this method, full exploration of the fascial plane and penrose drain placement may be extremely uncomfortable.

In the case presented, both the acute symptoms and cause of infection were addressed with a single surgical procedure. Dr. Freedman's treatment approach is considerably more protracted, more painful and requires an additional surgical procedure. I contend that the patient's interests were far better served by the treatment performed. It is unfortunate that in selected cases Dr. Freedman would deny his patients the benefits of this safe and effective technique.

Iain A. Nish, B.Sc., M.Sc., DDS
The Toronto Hospital, General
Division, Department of Oral and
Maxillofacial Surgery
Toronto, Ontario

Tax Equity

On several occasions, I have read a comment by our president, Dr. Sigfstead, relating to the potential taxation of dental plan benefits.

This potential has been described as an unfairness (sic) related to the access of 70 per cent of Canadians to employer-sponsored health and dental care, tax-free.

I would suggest that an alternative perspective on this issue could be more appropriately and usefully envisaged. This perspective would presuppose that government, in any form, does not have an undisputed mandate to tax all our activities (especially those health-care related).

It might be more appropriate if we, as a profession, were to work toward assisting the 30 per cent of

the population who do not possess a dental plan to achieve this goal. Surely, we should not be allying ourselves with the penalization of the remaining 70 per cent who (through a combination of intelligence, effort, and foresight) have worked toward staking responsibility for their own health care needs?

"You cannot strengthen the weak by weakening the strong." - Abraham Lincoln.

Andrew F. Thompson, BDS, DDS,
Dip. Ortho.
Halifax, Nova Scotia

Editor's Response

CDA has consistently maintained that the federal government should not jeopardize the oral health of 70 per cent of Canadians to ensure that the remaining 30 per cent are treated equally under the tax system.

During the 1995 pre-budget consultations, we offered to work with the federal government to find a solution to the tax equity issue that would allow those Canadians with limited or no access to employer-sponsored dental care to enjoy the same tax advantages as the 70 per cent whose oral care needs are covered by a dental plan. This offer still stands. CDA recently wrote to Finance Minister Paul Martin to renew our offer to work with him, his department, and the House of Commons Standing Committee on Finance to resolve the equity question.

In addition, CDA is a member of a multi-association coalition that was formed specifically to preserve the tax-free status of employer-sponsored dental plans. This coalition is currently seeking a resolution to the tax equity issue, and is considering appropriate strategies.

Finally, CDA will hold a national conference on the future of third-party plans in June. Representatives from the Finance Department will be invited to speak at this event, which will examine the whole issue of taxation as it relates to Canada's oral health care delivery system. The conference will also focus on the issue of managed care in dentistry, as well as the advent of flex plans.

P. Ralph Crawford, BA, DMD
Editor

AIDS and Discrimination

I am writing in regards to the April 1995 letter to the editor by Dr. Minna Stein, deputy registrar for the Royal College of Dental Surgeons of Ontario (Stein, M.H., AIDS and Discrimination. *Letters. J Can Dent Assoc* 61(4):277, 350, 1995). She, in turn, was responding to an article entitled "AIDS and Discrimination: The Windsor Case" published in the January issue (Crawford, P.R., AIDS and Discrimination: The Windsor Case. *J Can Dent Assoc* 61(1):25-27, 1995).

As a participant in this whole event, I can understand Dr. Stein's letter explaining the role of the RCDS. I do, however, take exception to her comment: "I believe it is important to emphasize to dentists that postponing a patient's treatment until the end of the day, simply because the patient is HIV positive, is unnecessary practice and discriminatory." I find the use of the word "simply" an unrealistic view of this disease and others. Presently in Kingston, due to the prison population, we are having to concern ourselves with a tuberculosis outbreak. I can assure her that the Department of the Solicitor General, and the Ministry of Health, do not view this as simply another prison health problem. The medical and dental community in Kingston have been warned of the seriousness of this situation and we have been advised to take precautions. I can also assure Dr. Stein that these two government departments do not view HIV infections as a simple problem. Will our possible treatment of these tuberculosis patients be viewed as discriminatory if we take special precautions? Will we now have the Human Rights Commission also setting special guidelines, as well as those by the provincial dental boards?

I also find it interesting that Dr. Stein states, later on in her letter: "Perhaps if the dentist had communicated his concern for the patient's welfare more clearly to the patient, this unfortunate incident with all its ramifications would not have occurred." Dr. Stein obviously views the cause of this problem as one of patient or practice management

and communication. Why is it then that in Ontario, where we now have mandatory continuing education, we are not allowed to count practice management courses towards our requirements.

Finally, and I admit this might be a low blow, I think that as a bureaucrat it is easy to criticize an incident, after the fact. It's tough out here doing dentistry with all the maze of rules and regulations, let alone keeping up with the technical progress within the profession. Color me discriminatory, but I think Dr. DeMarco did the right thing. He may not have been tactful, but he was willing to treat the patient, something which everybody seems to have overlooked from the start. And all of these ramifications only cost the taxpayer \$80,000, while the Human Rights Commission carries on without having to face the consequences of its mistake.

T.J. Swaine, DDS, MCID
Kingston, Ontario

Well Done CDA!

At the end of March 1995, CDA members received a letter thanking them and their patients for the letters that they sent to the Minister of Finance of Canada to show their disapproval of a tax on employer-paid dental benefits.

Thanks to this initiative, the tax was not imposed. However, dentists, first of all, must pay tribute to the CDA executives who organized and led this successful campaign.

Gérard de Montigny, BA, DDS, MSD
Université de Montréal

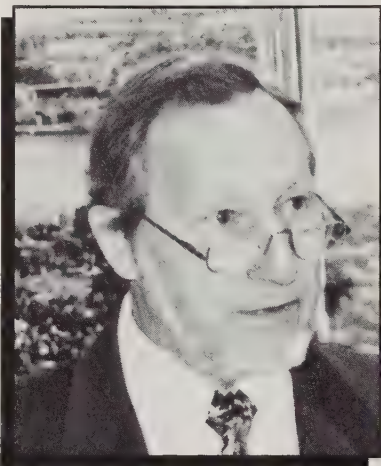
Well Done Journal!

I would like to take this opportunity to point out the quality of the French-language articles published in the March issue of the CDA Journal (Vol. 61, No. 3).

Gérard de Montigny, BA, DDS, MSD
Université de Montréal

NEWS UPDATE

Dean Rolland Vallée Dies At Age 62



Dr. Rolland Vallée

Dr. Rolland Vallée, dean of the faculty of dentistry at the University of Laval, died April 30 in Pointe-Claire, Québec, after a short illness. He was 62.

After obtaining his DDS from the University of Montreal in 1960, Dr. Vallée established a private dental practice in Sillery, Québec. He joined the University of Laval's dental faculty in 1973 and was named dean in 1992.

Dr. Vallée was involved in several research studies, and was the principal or co-author of a number of scientific papers related to geriatric dentistry. In fact, geriatric dentistry played a significant role in Dr. Vallée's professional life. From 1983-85, he chaired the Order of Dentists of Québec's (ODQ) ad hoc committee on geriatric dentistry; in 1984 he became a founding member and Canadian vice-president of the International Association of Gerodontia (IAG); in 1985 he organized the first-ever Québec symposium on geriatric dentistry; from 1985-90 he chaired ODQ's committee on gerodontology; and from 1987-88 he chaired the organizing committee for IAG's third international conference, in Montreal.

Dr. Vallée was also a fellow of the Academy of Dentistry International and a member of the Pierre Fauchard Academy. ■

WHO and Pan American Health Organization Announce Fellowships

Upwards of 10 to 15 fellowships, worth up to \$5,000 U.S. each, could be awarded through the annual World Health Organization/Pan American Health Organization competition this year.

Announced by the Canadian Society for International Health on behalf of Health Canada, the fellowship competition is open to Canadian health-care workers who have completed their formal training, have several years of related experience, and wish to continue their professional development in a health-related field relevant to their work.

Fellowships will only be awarded to individuals who are

currently working in the health-care system. All applicants will be rated by a Canadian selection committee on the basis of their education, experience, proposed area of study, and field of activity, as well as their intended use of the knowledge acquired through the program.

The competition closes September 15, 1995. Application forms and additional information can be obtained by contacting: WHO/PAHO Fellowships, c/o Canadian Society For International Health, 170 Laurier Ave. West, Suite 902, Ottawa, ON K1P 5V5; tel: (613) 230-2654, ext. 309. ■

Dr. Gerald Barrett Dies At Age 69



Dr. Gerald Barrett

Dr. Gerald Barrett, a former president of the Dental Association of Prince Edward Island, died May 4 in Charlottetown. He was 69.

A 1952 graduate of the dental program at Dalhousie University, Dr. Barrett practised in Halifax for three years before moving to Charlottetown in 1955. In addition to his term as president of the P.E.I. Dental Association, he served as its secretary registrar for 10 years.

Dr. Barrett was also a member of the advisory committee for the Holland College Dental Assisting Program, and participated in dental auxiliary utilization research. He was the first dentist in Canada to employ dental hygienists with expanded duties (reversible restorative procedures and the placement of rubber dam).

In 1984, Dr. Barrett was named outstanding alumnus by Dalhousie University. He was elected a fellow of the International College of Dentists in 1985, and became a member of the Pierre Fauchard Academy in 1989. ■

Ontario Orthodontists Appoint 1995-96 Executive

The Ontario Association of Orthodontists has elected its executive board for the 1995-96 term.

Dr. Hugh Fraser of Brampton will serve as the association's president. He will be joined on the board by Dr. Gordie Organ of Mississauga (vice-president); Dr. Michael Taylor of Hamilton (secretary treasurer); and Dr. Richard Marcus of Scarborough (immediate past-president). ■

U.S. Study Finds No Link Between Amalgam Use and Nerve Damage

A new study has found no link between the use of amalgam fillings and nerve damage.

Conducted by Dr. S.R. Saxe of the University of Kentucky, and funded by the National Institute on Aging, the study focused on 122 elderly nuns living in Milwaukee. Participating sisters were put through a battery of neuropsychological tests designed to measure their memory skills, concentration, language, and ability to reproduce line drawings. Test scores showed no differences in the functional ability of sisters with low levels of amalgam versus those with high levels.

The results of the study were presented in March during the American Association for Dental Research annual meeting in San Antonio, Texas. ■

Free Chalk Available

The decision to use soap instead of chalk during the carving portion of its annual exam has left the Dental Aptitude Test (DAT) Program with a surplus of chalk cylinders on its hands.

To solve the problem, the DAT program is making the excess chalk cylinders available free-of-charge to dental faculties and hygiene programs that can put them to good use.

All requests for the free chalk should be directed to: Ms. Danuta Askew, Coordinator, DAT Program, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6; tel: (613) 523-1770, ext. 216. ■

1995 CDA Teaching Conference Planned

CDA's 1995 Teaching Conference will be held October 27 and 28 in Vancouver.

Chaired by Dr. David Donaldson, the two-day event will revolve

around the theme of "Clinic Administration — Patients, Computers and Dollars," and include presentations on the use of computers in faculty clinics, and alternative methods of cost recovery in dental clinics.

To register, or to obtain more information, contact the Coordinator, Council on Education, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6; tel: 1-800-267-6354; fax: (613) 523-7479. ■

Journal of Community Dentistry Appoints New Editor

The Canadian Society of Public Health Dentists recently appointed Dr. John O'Keefe, a dental health specialist from Toronto, as editor of its bi-annual *Canadian Journal of Community Dentistry*.

The *Journal* publishes a mixture of news and scientific articles of interest to public health dentists. In its March 1995 issue, for example, the publication included articles on the role of the dentists in situations of family violence and the role of teaching health units in Ontario.

Dr. O'Keefe has invited dentists interested in community dentistry or public health to contribute to the *Journal*. For more information, contact Dr. O'Keefe at the North York Public Health Department, 5100 Yonge Street, North York, ON M2N 5V7; tel: (416) 395-7603. ■

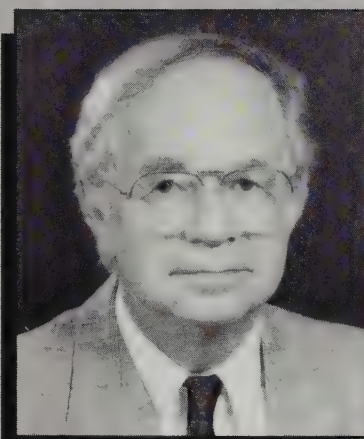
1994 Teaching Conference Proceedings Released

The proceedings of the 1994 Canadian Dental Association Teaching Conference are now available.

Held at the University of Toronto October 13-15 last year, and chaired by Dr. Donald Lewis, the conference addressed the topic of Clinical Epidemiology and Decision Making.

Forty-four representatives from Canada's 10 dental faculties attended the three-day conference to hear invited presentations on a variety of subjects, including: variability in clinical decisions; tools required for decision making; biometrics of diagnostic testing; certainties and uncertainties in the use of decision trees; and a critical analysis of the literature.

The keynote address, delivered by Dr. K.J. Anusavice of the University of Florida, dealt with "The Use of Decision Making Analysis in Restorative Dentistry to Minimize Risk of Over-Treatment and Under-Treatment."



Dr. Donald Lewis chaired the 1994 CDA Teaching Conference

The full proceedings from the conference, which received financial support from Procter and Gamble and the Dentistry Canada Fund, can be obtained by contacting the Coordinator, Council on Education, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6; tel: (613) 523-1770, ext. 205. ■

UBC To Open New Forensic Dentistry Centre

The University of British Columbia plans to open a new forensic dentistry centre that will assist police agencies from around the world in their work.

Under the auspices of the Bureau of Legal Dentistry (BOLD), the centre will conduct research aimed at refining current techniques in forensic dentistry. It will also investigate new methods for collecting, preserving and analyzing dental evidence.

"The advances produced in this laboratory will help the police solve crimes and the justice system deal with the persons responsible," said Dr. David Sweet, a lecturer in UBC's faculty of dentistry, where the new centre will be based. "More crimes will be solved and more criminals will be apprehended."

Dr. Sweet, one of only four board-certified forensic odontologists in Canada, will direct the new centre and provide the framework for its inaugural research. One of BOLD's first projects will be to expand on his pioneering work in the forensic analysis of the DNA taken from bite and suck marks on human skin.

In addition to its research activities, the centre will offer recognized training in forensic dentistry. ■

Three New DCF Funds Launched

Three new charitable funds have been added to the Dentistry Canada Fund.

The John Leishman Developing Fund was established in December 1994 through a grant from the Kenora-Rainy River Dental Association. Dr. Leishman was a long-time member of the association prior to his death in November 1993.

December also saw the creation of the International College of Dentists (Canada) Project Fund. This fund will be used to identify and support dental projects that are being undertaken by Canadian dentists to assist Third World countries. A special committee will meet annually to select worthy projects.

The third fund was established in memory of the late Dr. Frank Popovich, and bears his name. Once the fund surpasses the \$10,000 threshold, it will be used to support an annual scholarship for a worthy orthodontic student. Recipients will be selected through a national, open competition conducted by the DCF fellowship advisory committee.

Two other DCF development funds recently achieved the \$10,000 capitalization plateau, and have been awarded full endowment status. The Don Williams and Barbara Wilson endowment funds will be used to support educational projects.

Donations to these and other DCF funds are tax deductible. For more information, or to make a contribution, contact: James Wegg, Executive Vice-President, Dentistry Canada Fund, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6. ■

LISTERINE

ANTISEPTIC-ANTIPLAQUE
ANTINGIVITIS - MOUTHWASH

INDICATIONS: Helps reduce gingivitis (minor inflammation of the gums caused by plaque above the gumline) when used in a conscientiously applied program of oral hygiene and dental care. Kills the germs that cause bad breath, plaque, gingivitis and sore throats due to colds.

CAUTIONS: Keep out of reach of children. Do not swallow. Not to be used by children under 12 years of age. In case of accidental ingestion, contact a Poison Control Centre or doctor immediately.

DOSAGE: Rinse full strength with 20 mL for 30 seconds twice a day.

MEDICINAL INGREDIENTS: Eucalyptol 0.091% w/v, Thymol 0.063% w/v, Menthol 0.042% w/v.

NON-MEDICINAL INGREDIENT: Alcohol.

NOTE: Cold temperatures may cloud this product, its efficacy will not be affected.

SUPPLIED:

Original Listerine: Clear, amber liquid available in bottles of 250, 500, 750, and 1,000 mL.

Cool Mint Listerine: Clear, blue, cool mint flavoured liquid available in bottles of 250, 500, 750, and 1,000 mL.

Fresh Burst Listerine: Clear, green, mint flavoured liquid available in bottles of 250, 500, 750, and 1,000 mL.

LISTERINE FIGHTS GINGIVITIS
WITHOUT STAINING

WARNER
WELLCOME

©1994 Warner-Lambert Company Inc. use Scarborough, Ontario M1L 2N3
(P&G)



LIBRARY PACKAGE



During the month of June, the CDA Library is offering an information package on **HANDPIECE STERILIZATION**.

This package contains current articles from the dental literature on handpiece asepsis, including information on waterlines.

Library packages are available to CDA members for a fee of \$5, plus applicable taxes, and to non-members for a fee of \$10, plus applicable taxes. To get yours, call the CDA Library at: 1-800-267-6354, ext. 223; or fax your request to: (613) 523-6574.

BOOK REVIEWS

Painless Parker: A Dental Renegade's Fight to Make Advertising "Ethical"

by Arden G. Christen and Peter M. Pronych

1995, McCurdy Printing and Typesetting, Halifax, N.S.; 492 pages, 88 illustrations; \$49.95; ISBN 1-885873-01-8

This soft-cover book is undoubtedly the best biography to date of the dentist most commonly associated with advertising — Dr. Edgar Randolph Parker.

The text is a collaboration of two dentists, Dr. Peter Pronych of Dalhousie University and Dr. Arden Christen of Indiana University. Both authors developed an interest in Painless Parker during their undergraduate dental years, but it wasn't until they met for the first time, while presenting separate papers on Parker's life at the 1986 meeting of the American Academy of Dental History, that they decided to pool their interests. Pronych covered the Canadian aspect of Painless Parker's birth, upbringing and early dental career, while Christen was responsible for researching Parker's U.S. career.

The resulting book is exceptionally well researched. Through a series of interviews, and the cooperation of Painless Parker's daughter, now over 90 years old, the authors uncovered personal papers, documents, and anecdotes that were previously unavailable. Taken together, they provide an intimate insight into Parker and the dental times in which he lived.

The book traces the life of Painless Parker from his birth in Tynemouth Creek, New Brunswick, in 1872, through his formative years with his family, his graduation from the Philadelphia Dental College in 1890, and his travels back and forth across two countries until his death in San Francisco in 1952. Along the way, it describes his constant battle with the profession's "ethicals" over dental advertising, but at the same time it never allows the reader to lose sight of the fact that Parker was a competent dentist and a harbinger of the poor who couldn't afford regular dentistry.

A glance at some of today's dental listings in the *Yellow Pages* indi-

cates that Parker may have been a man ahead of his time. He was a pioneer in franchising and incorporating dental offices, as well as in rehabilitating confreres who had drug and drinking problems.

The book is highly recommended for anyone interested in our rich dental history. It is hard to put down once started, although some of the intimate details of Parker's family life tend to become a bit wearisome. The book is formatted in a novel fashion, with the more than 80 illustrations and accompanying footnotes appearing in side bars. Unfortunately, some of these photos are small and blurred, and the footnote type can be difficult to read.

Reviewed by:

P. Ralph Crawford, BA, DMD
Editor of the Journal of the Canadian Dental Association

Implant Prosthodontics: Clinical and Laboratory Procedures

by E.J. Fredrickson, P.J. Stevens and M.L. Gress

1994, Mosby-Year Book Inc.; 182 pages, 609 illustrations (585 in color), \$112; ISBN: 0-8016-1635-2

Implant Prosthodontics presents clinical and laboratory techniques for the prosthetic rehabilitation of edentulous and partially edentulous patients.

The book is written by two dentists and a dental technician, with contributions from dental hygienists. Throughout the text, the authors emphasize the importance of a team approach in producing a successful prosthetic result. This approach is described in detail, with particular emphasis on what happens when there is a lack of communication within the team, and when the roles and capabilities of each member of the team is not understood by the other team members.

This book has 11 chapters and covers most aspects of implant prosthodontics. The relevance of stents in surgical procedures is covered and well-illustrated, as is the treatment of the completely edentulous maxilla and mandible with fixed-implant retained prostheses. The single-tooth,

partially-edentulous, fixed-implant prosthesis and the overdenture prostheses are also covered. There is a good section on the complications associated with implant prostheses, together with some highly relevant guidelines on maintenance and hygiene procedures.

The book has 609 illustrations — 585 in color — which depict most aspects of the relevant clinical and laboratory procedures, and are accompanied by a reasonably well detailed text. Most of the photographs and descriptions are based on the Nobelpharma implant system, but the UCLA abutment system is also described.

There is a list of 22 references at the end of the book that provides the reader with some rationale as to why certain procedures or options were chosen. This list of references is limited, however, and the authors should have included more references to back up their treatment decisions. For example, the section on overdentures is illustrated with a bar framework that has non-parallel bars, extending distally to the last implant, to which the retention clips are attached. This would place unfavorable forces on the bar framework when the denture rocks antero-posteriorly. I would recommend that the bar framework have parallel bars, to which the clips would be attached. This would reduce the torquing on the bar as the denture rocks antero-posteriorly. The authors give no reason in the text to explain why they used the non-parallel bar design.

All the same, this is an excellent book for dental students, dentists and technicians. Although it is only 182 pages long — and therefore cannot cover all the various aspects of implant prosthodontics — it is well-illustrated, and it is detailed enough to give a good overview of many of the prosthetic situations readers may encounter.

The chapter on complications should be read by anyone planning on making an implant prostheses. The Nobelpharma maintenance record provided in the text is also useful, and many dentists may wish to incorporate it into their practice charts. This book is reasonably priced, and is strongly recommended for anyone who would ap-

JOURNAL

June/
Juin
1995
Vol. 61
No. 6

precipitate a good overview of implant prosthodontics.

Reviewed by:

Richard B. Price, BDS, MS, DDS, MRCD(C)

Associate professor, department of restorative dentistry, Dalhousie University

Contemporary Fixed Prosthodontics, 2nd edition

by S.F. Rosenstiel, M.F. Land and J. Fujimoto

1995, Mosby-Year Book Inc.; 675 pages, B&W illustrations, \$85.25; ISBN: 0-8016-6528-0

This updated version of the 1988 first edition is intended as a comprehensive text for undergraduate dental students and practising clinicians. However, because it tries to cover all aspects of fixed prosthodontics in detail, this somewhat lengthy tome may be overwhelming for novice dental students.

While the book's overall organization is logical — with four sections, entitled: Planning Preparation; Clinical Procedures, Part I; Laboratory Procedures; and Clinical Procedures, Part II — the flow of information within each chapter is sometimes hard to follow. For example, the first page of text describes the potential benefits of fixed prosthodontic treatment, but never provides a definition of fixed prosthodontics. The inclusion of a glossary at the end of each chapter, or at the end of the book, would be beneficial, especially for undergraduate students. Similarly, while the chapter on periodontal considerations is worthwhile, the more critical periodontal implications of fixed prosthodontic treatment are overshadowed by the excessive detail it provides on the periodontal procedures themselves. The text is amply illustrated with diagrams and black and white photographs, although some of the photos appear to be under-exposed.

Having offered these criticisms, there is much to recommend in this

text. The information is very up-to-date, including the discussions on fixed implant-supported protheses, veneers, and the latest generation of all ceramic crowns. Such currency is no small feat in this rapidly changing field.

Basic science is used throughout the text to support the treatment presented, and each chapter is well-referenced. The authors also offer more than one technique for many of the procedures described — an approach that contributes to both the completeness and the complexity of the text.

In short, this book could be a worthwhile reference text for practitioners, although it would likely require some augmentation, in the form of a glossary, for it to be used effectively as an undergraduate-required text.

Reviewed By:

Joanne N. Walton, DDS, Cert. Pros., FRCD(C)

Assistant professor, division of prosthodontics, faculty of dentistry, University of British Columbia.



CANADIAN CENTER FOR CONTINUING DENTAL EDUCATION INC.

Presents

CURRENT ADVANCES IN DENTISTRY

A 28 credit hour academic course to fulfill the TOTAL YEARLY Continuing Education requirement for dentists and allied personnel in a FOUR DAY comprehensive course.

SUNDAY, OCTOBER 29 — WEDNESDAY, NOVEMBER 1, 1995
THE WESTIN BAYSHORE HOTEL, VANCOUVER, B.C., CANADA

Faculty and Course Agenda: Faculty members are from Canada and the United States

Dr. E. J. Hannigan	Periodontics:	Periodontics for the dental team
Dr. T. Larder	Endodontics:	Diagnosis, Instrumentation, Obturation, Bleaching
Dr. P. Cyr	Oral Surgery:	Mandibular anesthesia — The Hot Tooth
Dr. P. Cammarata	Prosthodontics:	Restoration of endodontically treated teeth, Principles of esthetics, Anterior ceramic restorations, Simple 3-Unit FPD construction

Tuition:	Any One Day	Any Two Day	Full Course	Continental breakfast, full lunch and coffee breaks are included each day in tuition cost.
Dentist:	\$225.00	\$425.00	\$695.00	
Allied Personnel:	\$115.00	\$200.00	\$375.00	

Accreditation: This program is eligible for Category I credit hours.
SEVEN CONTINUING EDUCATION HOURS will be awarded for EACH DAY.

To Request Information • Brochure • Hotel Accommodations • Contact: Janet Dawson
CCCDE • Tel: 1-800-494-5536 • Fax 1-800-494-5536 • 125A-1030 Denman St., Vancouver, B.C. Canada V4G 2M6

JOURNAL

June/
Juin
1995
Vol. 61
No. 6



Two of these patients need your advice.

Dentinal Sensitivity is easily and effectively treated with the Sensodyne Complete Sensitivity Care System. Yet two thirds of sufferers may not alert their dentist to the condition, and discover the benefits of in-home therapy. The other third are satisfied with the results of the Sensodyne dentifrice program⁽¹⁾.

Only Sensodyne gives the dentist and hygienist the range of "tools" necessary for a broad spectrum of patient profiles. It starts chairside with Sensodyne Desensitizing Solution and carries through to your recommendation for one of four dentifrice options, including the new Sensodyne-F Baking Soda Clean with a refreshing taste to maximize compliance. This range of dentifrice choices provides two modes of action; either by dentinal tubule occlusion (Sensodyne with 10% strontium chloride), or by nerve de-polarization (Sensodyne-F with 5% potassium nitrate). And we have added two specially designed extra-soft brushes, to encourage better oral health through regular, pain-free brushing.

Only Sensodyne maintains such a total commitment to the dental community ... as we have for over 30 years ...

through our policy of trial at no charge for both the dentist and the patient. You need only call to engage our support in helping your patients experience freedom from the pain of tactile, thermal or osmotic shock. Let us help remove one major obstacle to improved oral health.



The Complete Sensitivity Care System.

Sensodyne*
Toothpaste

*TM Block Drug Co. (Canada) Ltd. 7600 Danbro Crescent, Mississauga, Ontario L5N 6L6
1 800 387 4588 or 1 800 268 5747

(1) Data on file - Block Drug Co. (Canada) Ltd.



Canada's Dentists Can Now Choose Travel Insurance With An "Edge"

Dr. James Wright, President of CDSPI

From time to time, the people at Canadian Dental Service Plans Inc. — myself included — like to remind Canada's dentists about CDSPI's "Edge" formula. It's the criteria used to decide which insurance plans are offered in the Canadian Dentists' Insurance Program, and which investment funds and programs are offered for retirement planning. CDSPI's "Edge" formula is:

"If there is a need in the profession,
If it can be done better,
If it can be priced better,
If it can be serviced better,
Then CDSPI will be there,
providing that product or service."

Recently, the insurance experts at CDSPI applied the Edge formula to travel insurance. Their analysis determined that CDSPI could provide a travel plan that was well worth offering, and that there was definitely a need for such a plan. In fact, emergency travel insurance is a necessity in today's world. Our government health coverage for out-of-province travel has been severely cut back, while health-care costs have increased. It's not unusual to face a bill of thousands of dollars for just a couple of days in a hospital out of the

country. Without proper travel insurance, an extended hospital stay or a serious operation could result in financial disaster.

Can it be done better or priced better? You'll be glad to discover that the travel insurance plan offered by the Canadian Dentists' Insurance Plan is as good as or better than the leading plans available anywhere in Canada, at a price that is among the lowest — if not *the* lowest — in the marketplace.

A Low Annual Premium For Your Convenience

I'll explain the details of the plan shortly, but first let me point out a particular feature that is likely its greatest asset. This plan covers an unlimited number of trips per year. That means you can put an end to buying travel insurance every single time you go out of province or out of the country to visit relatives, enjoy a vacation, or attend a professional function. It's the most convenient way to purchase travel insurance.

When you buy your travel insurance, you select one of three coverage options — for trips up to 30 days, 60 days, or 90 days. So, for example, if you choose 60-day coverage, you are completely covered for as many trips of 60 days or less that you take

throughout the year — but you can still purchase extra coverage if a trip is going to last longer. Also, you can choose individual or family coverage. If you compare the price of this plan with others in the marketplace, you'll find that this plan's year-round coverage costs about the same as many other plans' coverage for just a single trip.

Each insured person receives \$1 million of coverage per trip, which applies to virtually every expense related to emergency hospital, surgical and medical treatment for illnesses or injuries. Coverage pays for much more than just the basics. In fact, it is very comprehensive, and includes a semi-private room, ambulance service, the cost of crutches, prescription drugs, and many other items and services.

In addition to these emergency medical expenses, this travel plan also covers private nursing expenses, chiropractic services, physiotherapy, emergency air transportation, and emergency dental expenses. There are many more benefits, which you can find out about by calling CDSPI for information.

In the Edge formula, one very important criterion is whether the product can be serviced better. Again, this plan fares extremely well. As mentioned

above, you have the convenience of completing just one application for the year — instead of buying insurance every time you travel.

Another example of better service is the way the plan pays your medical expenses. Many emergency travel insurance plans require that you pay the bill to the medical facility, and then get reimbursed when you submit the receipts. But the Canadian Dentists' Insurance Plan travel insurance plan pays the medical facility directly, so you don't have to worry about laying out many thousands of dollars while you're on vacation. Additionally, some emergency travel

plans seek reimbursement from the insured person's extended health care plan, if it includes emergency travel health insurance. But the Canadian Dentists' Insurance Plan travel insurance plan does not seek this reimbursement.

The plan also provides a number of 24-hour telephone information services, through an organization called International SOS Assistance, Inc. This organization provides claims services if you have a medical emergency, but it also provides many other services. For example, when you're planning your trip, you can find out about doctors and hospitals in the area you're going

to visit. If your passport, credit cards or airline tickets are lost or stolen while travelling, International SOS will help you obtain replacements. International SOS will even help you find a local lawyer if you need legal assistance out of province or out of the country. There are several other International SOS services that you can find out about from CDSPI.

You can rest assured that this is a reliable plan. It's underwritten by Liberty Mutual Insurance Company, which is one of the largest insurance companies in the world. Liberty Mutual is also a leader in emergency travel insurance — a position recently



CDA RETIREMENT SAVINGS PLAN

✓ Check Out Superior Investment Performance

CDA Fund Performance (for periods ending April 30, 1995)[†]
(Checks indicate Superior Performance Compared to Industry Averages*)

CDA Fund	1 Year		3 Year		5 Year		10 Year	
	CDA	Other*	CDA	Other*	CDA	Other*	CDA	Other*
Aggressive Equity	-12.5%	-6.0%	n/a		n/a		n/a	
Common Stock	-0.5%	1.2%	10.4%	10.5%	✓ 8.8%	8.4%	✓ 9.6%	8.3%
Balanced	3.2%	3.7%	8.1%	9.4%	9.3%	9.7%	✓ 9.3%	8.6%
Bond & Mortgage	✓ 7.7%	6.6%	✓ 9.2%	8.4%	✓ 11.7%	10.9%	✓ 10.4%	10.2%
Money Market	✓ 6.1%	5.3%	✓ 5.4%	4.9%	✓ 7.4%	6.9%	✓ 8.4%	8.1%
International Equity	✓ 2.7%	-1.0%	n/a		n/a		n/a	
European	✓ 13.8%	1.6%	n/a		n/a		n/a	
Pacific Basin	-2.0%	-9.0%	n/a		n/a		n/a	
Emerging Markets	-9.0%	-16.2%	n/a		n/a		n/a	

[†] CDA figures indicate annual compound rate of return with all fees deducted. The figures are historic rates based on past performance and are not necessarily indicative of future performance.

* Comparison performance figures are Globe and Mail averages for the range of similar funds offered in the marketplace before sales charges, as published in the May 18, 1995 issue.

For current unit values and GIC rates call CDSPI toll-free at: 1-800-561-9401, ext. 525.
(Metro Toronto call: (416) 296-9401.)



CDSPI

JOURNAL

June/
Juin
1995
Vol. 61
No. 6

strengthened when the company acquired Ontario Blue Cross.

I'm sure that you're getting the message that this plan is first class. Here at CDSPI, the plan was compared with a great many others, and it invariably came out on top. For example, it provides broader coverage than many credit card travel insurance plans: Travel insurance from the Canadian Dentists' Insurance Program covers all insured family members, whether they're travelling together or independently, but most credit card travel insurance only covers family members when they're travelling with the cardholder. In addition, many credit card travel insurance plans don't cover travel within Canada. This plan covers all out-of-province travel.

Compared with plans that do cover domestic and international travel, this plan provides the same general coverage, but at a lower cost — usually a *significantly* lower cost.

Keep in mind, however, that if you already have travel insurance, you may not need this new plan. The travel insurance plan I have outlined is an option for you to consider. It is not intended — for example — to replace the travel insurance provided as part of some extended health care plans. It is up to you to compare the features of whatever travel insurance you may already have with the features of this new plan, and then determine whether you have a need for travel insurance from the Canadian Dentists' Insurance Program.

Certainly, though, this new plan is travel insurance with an "edge." It's a low-cost, high-quality plan that can benefit all eligible dentists, and it's available now from CDSPI — on behalf of the Canadian Dental Association and co-sponsoring provincial associations. With the addition of this new plan, the Canadian Dentists' Insurance Plan reinforces its reputation as one of the most comprehensive insurance programs available to any professional group in Canada. That's a reputation of which all dentists can be proud. ■

CDA MUSEUM donations requested

Memorabilia from CDA's 92-year history is now on display in antique cases in the library of the Canadian Dental Association headquarters in Ottawa.

As originally planned, the displays are changed on a regular basis to suitably depict different eras of our rich dental history. Donations of museum-quality dental artifacts are still being accepted and are very much appreciated. Particularly requested are larger items such as chairs, units, cabinets and X-ray machines, plus historical photos and records.

Also of interest to dental historians are the items highlighted in the column entitled "What's it?" which appears monthly in the Journal. This column elicits the help of readers in identifying some of the antique items presently on location in the museum.

For further information, contact Dr. Ralph Crawford at the Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6. (613) 523-1770, or call toll-free 1-800-267-6354.

There Is An Alternative To High Priced Computer Systems!

Canadian dentists coast-to-coast have used MaxiDENT dental management software for twelve years with immense satisfaction. Canada's Easiest-To-Use dental system handles billings, receivables, claims, CDAnet EDI, statements, recalls, practice marketing, and much more, and gets better with every update!

MaxiDENT includes an electronic appointment scheduler, two word-processors, a step-by-step illustration-packed User's Guide, AccPac Payables, Payroll, and General Ledger plus a free upgrade to our new Windows version.

Reliable, proven, DOS-based, multi-user, multi-tasking MaxiDENT runs on IBM compatibles and outperforms systems costing many times more. It can be used with Microsoft Windows, and never needs costly Unix or Xenix.

MaxiDENT is so easy to learn and use, just follow our instructions and run it in your office within days. Or choose low-cost professional on-site training. Either way, you have a full year's support which includes unlimited toll-free hotline help and free updates. No wonder Oral Health called MaxiDENT Canada's best kept secret!

When you order MaxiDENT software, we help you get your best price on computer equipment from your local vendor, or us. Save thousands of dollars and join a growing list of satisfied users.

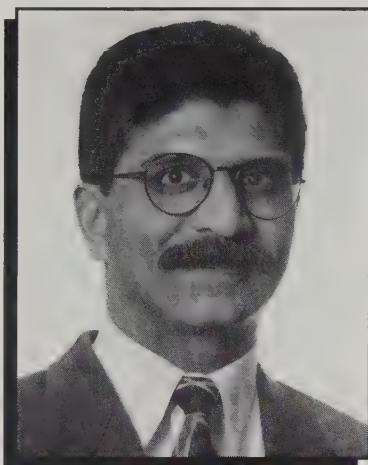
Don't be fooled by its low price of only \$4995. Learn why patients, staff and dentists love powerful MaxiDENT, how it saves time, eliminates bottlenecks, relieves stress, makes you money, and has important tax advantages. Phone toll free now without obligation for an information package, user list and demo disk.

Call Arthur Arkin, President, Maxim Computer Systems, developers of

MAXIDENT Dental Management Software



1-800-663-7199



Strive for Excellence, Not Perfection

Imtiaz Manji, B.Sc.

Principal of ExperDent

I usually try to steer clear of making generalizations about dentists. I've met thousands of dentists, and I recognize that they are individuals first, dentists second. Each brings their own personality and skills to the profession they proudly share.

This said, if there is a generalization to be made, it is that many dentists (though admittedly not all) are perfectionists by nature.

It's no coincidence that a profession that demands meticulous attention to detail and exacting standards attracts (or possibly hones) perfectionists. From the outset, the dental profession places rigorous demands on aspiring practitioners. Only bright, high achievers are given the privilege of entering dental school. And it's just the beginning of a foundation that encourages, and certainly condones, perfectionistic tendencies.

At dental school, students are exposed to a profession that works in tenths of millimetres in a confined area — the mouth. Striving for excellence is a prerequisite to success. But with the incredible pressure to succeed, it's easy to understand how students make the leap from trying to achieve excellence to entering the path of perfectionism.

Perfectionism In the Practice: The Road To Self-Defeat

Perfectionism may be workable or manageable during dental

school, but in the "real world" of dental practice, where things are not perfect, it's bound to take its toll. Like it or not, imperfection holds the upper hand in today's world, and the best any human can do is accept this fact, learn from his or her mistakes, and adapt accordingly.

There are signs, though, that some dentists are unable to accept the imperfect world and, as a result, face some or all of the following consequences:

- undue stress;
- strained relationships with staff, patients and family;
- an overwhelming sense of failure (because things are not perfect);
- general unhappiness;
- a tendency toward workaholicism; and burnout.

This certainly doesn't mean that dentists should abandon high principles, or that they should not strive to provide quality treatment to their patients. Striving for excellence should prevail. But trying to achieve excellence is very different from insisting on perfection.

When things go wrong — which inevitably happens — the perfectionist dentist has difficulty acknowledging the situation and taking the steps needed to rectify it. He or she finds it devastating to admit to a patient that a mistake was made, because it is deemed to be a sign of failure. In fact, it's not

a sign of failure, it's a sign that you are human. Certainly, you should apologize to patients for any inconveniences (such as additional appointments) that may result from mistakes, but you shouldn't shy away from dealing with them head on. By telling patients that you're not completely satisfied with the treatment — and that you want to provide them with the absolute best — you don't look like a failure. Rather, you convey to patients that you're a committed professional, and that you will provide the best possible dentistry even if this means having to perform an occasional re-treatment. If anything, patients will gain further respect for you if you are objective and honest in assessing your own work.

Although perfectionism is dangerous in general, it's particularly worrying in a profession that already has a number of external stressors. Being a dentist often involves being independent and self-employed, and that comes with a whole host of responsibilities, from ensuring the financial buoyancy of the practice to maintaining a high level of staff morale. These external factors are implicit in the practice of dentistry. But adding the pressure of perfectionism, an internal stressor, to this list makes for a rather heady mix.

Drs. Zakher and Bourassa, in a November 1992 article, provided an excellent description of the in-



ternal-external stressors that play on dentists:¹

"Some stressors are external and stem from job demands and environment, while others are internal, stemming from the dentist's own expectations and his or her continually striving for perfection. Despite the fact that dentists are well educated, they encounter many stresses as a result of the doctrine that was ingrained in them from the beginning of dental school: anything less than perfect is the equivalent of failure. No human can live with that heavy burden, because perfection is not of this world."

Ironically, those dentists who strive for excellence, not perfection, are probably the best providers. They are free to engage fully in the profession because they are not choking themselves under the noose of perfectionism. They take continuing education courses, routinely read about advances in the profession, and learn about delivering new procedures. But in doing so, in embracing the new and unfamiliar, they are implicitly accepting the potential for failure. In contrast, perfectionists prefer to remain status quo. They are afraid to adapt to new techniques that could prove time-consuming and/or difficult to learn, and that patients may not embrace immediately.

In trying to sidestep the real, imperfect world, perfectionistic dentists set themselves up for general disappointment. Judging a practice's success by a perfectionistic standard is a tall order.

A retired dentist and close friend once told me that in his years of practice, not a day went by when a patient didn't tell him that he or she didn't want to be in his operatory. I doubt that this negativity from patients is unusual. Fortunately, this dentist didn't take negative comments personally. Like many other dentists who are happily practising their profession, he accepted that they really had nothing to do with his ability to provide quality dentistry and excellent service.

If you're expecting each patient to applaud you verbally at the end of each appointment, you're in the

wrong profession. Notwithstanding certain procedures — such as cosmetic work — dentistry typically doesn't lend itself to this type of exchange.

Satisfaction in dentistry comes from knowing that you're providing the best possible care to your patients and maintaining their oral health. It means keeping things in perspective, remembering the procedures that worked (not the few that didn't), and thinking about the patients who come back to you again and again, because they value your service.

Altering Yourself To the Warning Signs

If you're a perfectionist, you likely have unrealistic expectations about what you can achieve clinically. But perfectionism doesn't stop and start at the operatory door. It tends to be all-consuming, permeating each area of an individual's life and work. In a perfectionist's practice, high staff turnover and low staff morale are the norm. It's extremely difficult for staff — be they hygienists, assistants, or administrators — to be told that they aren't performing well when they're actually doing a very good job. You simply can't expect staff members to perform "perfectly" every single day of the week.

Patients also pick up on perfectionistic tendencies. But contrary to what many dentists think, perfectionism isn't the way to win their favor. Because perfectionists need to have control over situations, they often become frustrated with patients who don't fit into their ideals. But in a patient-doctor relationship, the dentist only has control over his or her behavior. You can't force patients to participate in bettering their oral health, you can only highly recommend that they do.

"To deal with perfectionism, it must be recognized that perfection in dentistry is as unattainable as is perfection in general. No one can be expected to produce the impossible. The human condition is not static, and even "perfect" treatment can be rendered imperfect in time. In addition, dentists must understand that they are not respon-

sible when patients neglect their best efforts."²

Not surprisingly, the private life of dentists with perfectionistic attitudes is also affected. The dentist's friends and family can't help but notice that the dentist doesn't seem to enjoy any time away from the practice, and that their every activity, be it an afternoon golf game or a skiing vacation, is approached in a perfectionistic way. It's not enough to be with loved ones and enjoy the moment, the perfectionist has to be master of all he or she undertakes.

Accepting Excellence, Rejecting Perfectionism

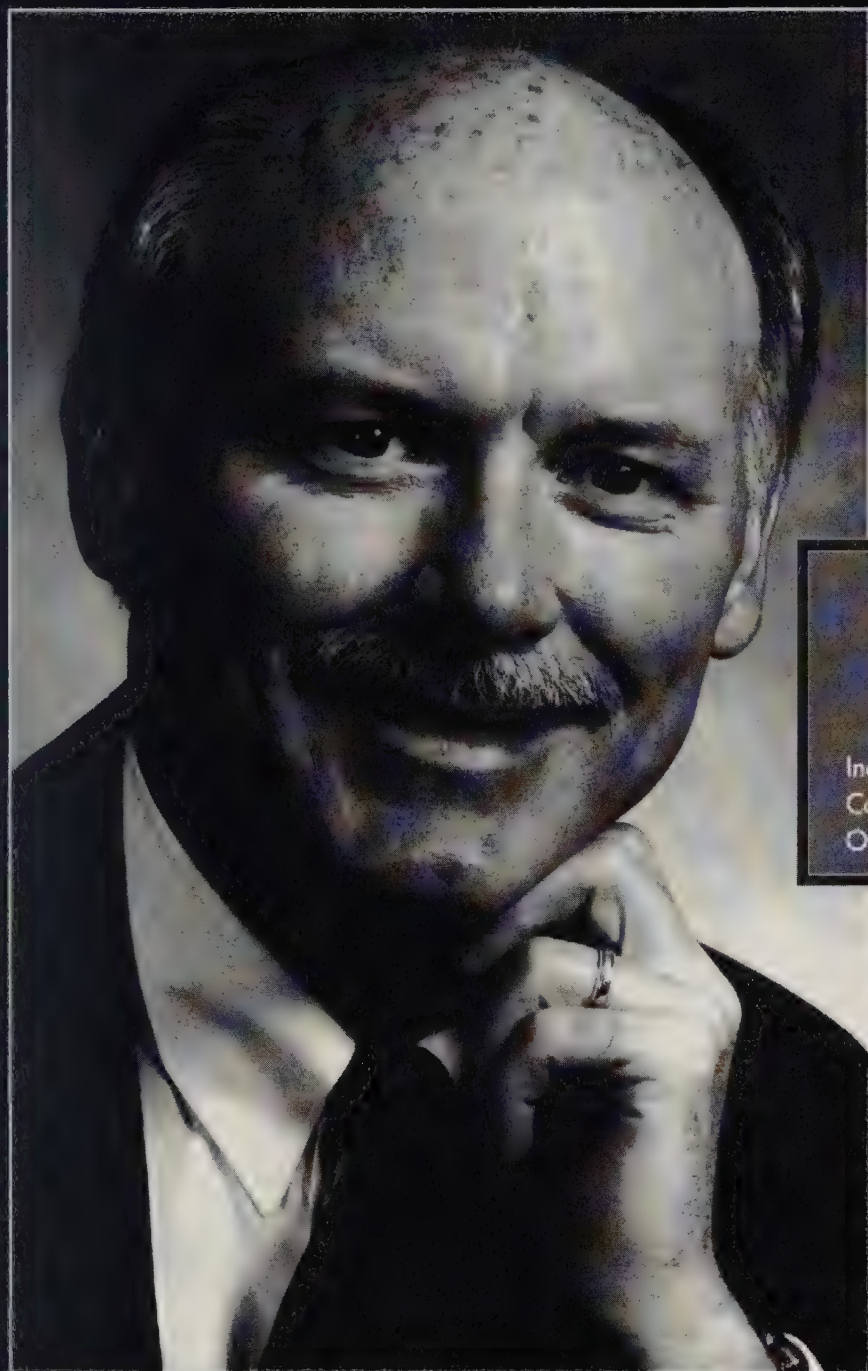
Although perfectionism isn't possible, and may create a lot of stress, it can sometimes be used positively as a personal yardstick. Let's pretend you're back at university. Getting 100 per cent on every exam over the course of your studies would be nearly impossible. But you could still receive excellent marks overall. The grade "A" usually has a range, perhaps 88 to 100 per cent. If you were to write an exam and receive a score in the low end of this range, you would still be receiving an excellent score. However, you would likely be motivated to get an even higher score on the next round, even though both marks would qualify for an "A" grade.

In dentistry — and beyond — you can also strive and achieve an "A" grade overall. The difference is that you are striving for excellence, rather than being consumed by perfectionism. And because there are clear differences between the two attitudes, you should know which camp you fall in. Perfectionism is self-defeating. It stresses, drains and frustrates, and its ripple effect on your practice is far-reaching. In contrast, trying to achieve excellence is a prerequisite and a lifeline for practising dentistry. The pursuit of excellence invigorates, stimulates, and challenges. The choice is yours. ■

1. Zakher, R. and Bourassa, M. Stress factors and coping strategies in the dental profession. *J Can Dent Assoc* 58(11):905-906, 910-911, 1992.

2. *International Journal of Psychosomatics*, 36:1-4, 1989.

The Faces of Fortune.



*L*ike almost everyone else, I started out 12 years ago with a small practice and big dreams. I was committed to taking advantage of any opportunity that would help me build the kind of practice and lifestyle I envisioned when I got into dentistry. Fortune Practice Management empowered me to do so.

By adopting the guidelines and tracking techniques I learned through my association with Fortune Practice Management, my practice has grown at a steady, sustained rate of 20% per year over the past 12 years. My cash flow and collections have increased significantly without

The Fortune File

Brosnahan & Finn Family Dentistry

	1982		1994
Income	\$9,882/mo.	▶	\$123,985/mo.
Collections	74%	▶	98%
Overhead	66%	▶	63%

any increase in overhead percentage. I now have three offices and a staff of 18 managing my daily activities.

But I don't measure the success of my practice strictly by the numbers. The on-going training we've been provided has helped my staff become highly effective at working together and maximizing each other's efforts. Our escalating financial situation has also given each person a better sense of their own long-range financial independence through our retirement plan.

To those who say "Sure, it's easy for someone with his resources to succeed!", I say that I never would've gotten to this point without taking that first step and teaming up with Fortune Practice Management. If you're serious about realizing your true potential, I encourage you to do the same.

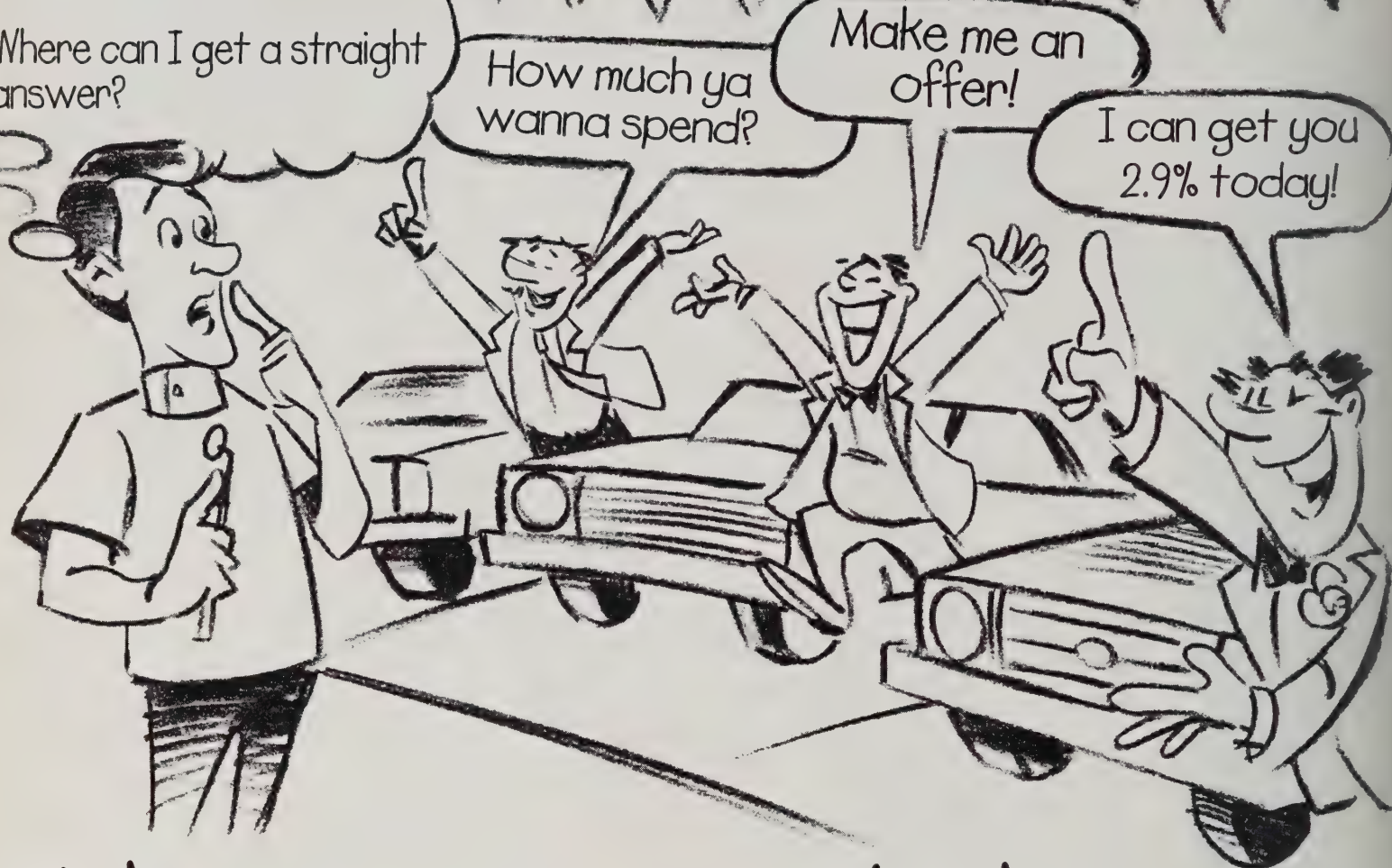
Michael Brosnahan

▶ Michael Brosnahan, D.D.S.
Perry, Iowa

FORTUNE PRACTICE MANAGEMENT®

1.800.628.1052

- Who really pays for "2.9%"?
- How much does "free" air conditioning cost?
- Where can I get a straight answer?



CDA Leasing... Straight Answers To Your Questions

CDA members enjoy substantial savings on new vehicles through our CDA Leasing program. Hundreds of members have taken advantage of this significant CDA Membership service since we introduced it in 1990, obtaining one or more new vehicles. CDA Leasing guarantees you the **best leasing value** in the marketplace.

We can help dispose of your existing vehicle. Lease documents are simple and straight forward, and financial terms can be tailored to meet your requirements. You can drive with no kilometer restrictions. We are here to serve you.

Please give us a call. **1-800-461-2923**



CDA LEASING

7100 Woodbine Ave., Suite 400, Markham, Ontario L3R 5J2 Telephone: (905) 477-5210, Toll-Free 1-800-461-2923

INFECTION CONTROL



The Law and Ethics In Relation To Dentists Treating HIV-Positive Patients: Two Recent Court Cases

Peter E. Graham, BA, BCL, QC

Norman M. Miller, B.Sc., DDS

Mili Harel-Raviv, DMD, Dip. Oral Med.

ABSTRACT

Two recent Canadian judgments regarding the application of human rights legislation to dentistry and HIV-seropositive patients are summarized and discussed.

In the Ontario case of *Jerome v. DeMarco*, the Ontario Human Rights tribunal found that seropositivity constitutes a "handicap" under human rights legislation. However, the tribunal dismissed the claim by a seropositive patient that he had been illegally discriminated against by a dentist who, on learning the patient was seropositive, delayed treating him until the end of the day.

This decision served as a precedent in the lengthy Quebec small claims court judgment of *Hamel v. Malaxos*. In this case, the dentist was held to have violated Quebec human rights legislation by trying to refer an HIV-seropositive patient to a hospital treatment centre rather than performing the appropriate dental treatment himself.

Court judgments regarding this problem are reported and discussed.

Key Words: HIV seropositive and law, dentists and law, AIDS, dentistry and law, ethics, AIDS and dentistry.

SOMMAIRE

Dans cet article, on résume et commente deux jugements rendus au Canada touchant la loi sur les droits de la personne et son application à la dentisterie et aux patients séropositifs.

En Ontario, dans l'affaire *Jerome c. DeMarco*, la cour provinciale des droits de la personne a décidé que la séropositivité constitue un « handicap » en vertu de la loi sur les droits de la personne. Cependant, elle a rejeté la plainte d'un patient séropositif qui prétendait avoir fait l'objet d'une discrimination de la part de son dentiste. Apprenant que le patient était séropositif, le dentiste impliqué avait reporté son traitement en fin de journée.

Cette décision a servi de précédent à la Cour des petites créances du Québec dans le long procès *Hamel c. Malaxos*. Dans cette affaire, le dentiste était accusé d'avoir violé la loi sur les droits de la personne en tentant d'adresser un patient séropositif à un centre hospitalier au lieu de lui donner lui-même le traitement qu'il fallait.

On fait état des décisions juridiques touchant ce problème tout en les commentant.

Mots clés : séropositivité et droit, dentistes et droit, sida, dentisterie et droit, éthique, sida et dentisterie.

Introduction

The experience of dealing with AIDS patients, combined with the potential for HIV to be transmitted in the dental office, has brought dentists face to face with their role as physicians of the oral cavity. Quite suddenly, the ethical dilemmas faced by the medical profession on a routine basis are now equally relevant to dentistry, and they've become an integral part of day-to-day dental practice. These issues are further complicated by the fact that HIV involves risk for the practitioner as well as the patient.

The risks involved for dentists, as well as for their staff and family members, have led many practitioners to re-examine their reasons for choosing a career in dentistry. This moral dilemma has also caused both prospective and current dental students to approach the profession from a new outlook, and with a much more thoughtful attitude.

The increasing interaction of HIV-infected patients with dental personnel — and of HIV-infected personnel with non-infected patients — has tested the moral fibre of dentists. Today, the decision to treat or not to treat a patient — or, for that matter, the patient's deci-

JOURNAL

June/
Juin
1995
Vol. 61
No. 6



sion to accept or reject treatment — is directly related to the changing attitudes of both society at large and the dental profession.

Society's attitudes are often shaped, to a significant degree, by the decisions made within the judicial system and vice versa. This paper will discuss two recent and possibly landmark decisions rendered by Canadian courts with respect to treating known HIV-positive and AIDS patients. These cases bring into sharp focus the confusion faced by both society and the dental profession in defining the standards of acceptable behavior. Dentists should be aware of these judgments as they provide clear examples of the issues that may arise in patient-dentist relationships that involve HIV and AIDS. The authors have attempted to set out the relevant elements of both cases in the interest of informing dentists of the related issues, and stimulating further discussion.

Case No. 1: The 1992 Ontario Case of Jerome v. Demarco¹

When Mr. Jerome arrived at Dr. DeMarco's office for his scheduled morning dental appointment, he advised the receptionist that he had AIDS.² Rather than allowing his dental hygienist to clean Mr. Jerome's teeth, Dr. DeMarco rescheduled the patient's appointment to the end of the day, saying he would look after Mr. Jerome himself.

Mr. Jerome initially agreed to the delay, but later refused the rescheduled appointment. He then initiated proceedings against Dr. DeMarco, claiming that the dentist had illegally discriminated against him. The action was dismissed.

Case No. 2: The 1993 Quebec Case of Hamel v. Malaxos³

When Mr. Hamel arrived at Dr. Malaxos' office for his scheduled dental appointment, he advised the receptionist that he had recently become aware that he was HIV seropositive. Subsequently, Dr. Malaxos told Mr. Hamel that he could not treat him, but had

made an appointment for the patient to be treated at a hospital.

Mr. Hamel protested. He did not go to the hospital and was eventually treated by another dentist. He subsequently sued Dr. Malaxos, claiming exemplary damages for illegal discrimination. The action was maintained, and exemplary damages were awarded against the dentist.

Analysis

A dentist may be the first health-care professional to be in contact with an HIV-positive patient, whether the dentist is aware of it or not. As Dr. Norbert Gilmour⁴ of McGill University's department of medicine explained in an article published in *Oral Surgery*, this concern was ultimately responsible for dentistry's acceptance and adoption of universal precautions:

"Today, meticulous infection control practices are essential for all dental care, regardless of whether patients are infected with HIV or any other transmissible disease. Such practices protect HIV-infected people as well as uninfected patients and dental-care providers. HIV does not pose new or unexpected threats for dental professionals, although the consequences of HIV may appear more threatening. Dentistry has had to confront the threat of HBV infection. Efforts that prevent HBV transmission will very effectively prevent HIV transmission.

"The dentist may be the first health-care professional to recognize manifestations of HIV infection in a patient and must be prepared to recognize that a patient may be infected with HIV or have a disease associated with this infection. The patient may need to be referred for further examination. The dentist should be prepared to discuss this, and then refer the patient for specialized care. Referring such a patient should not be misconstrued as abandonment, but rather as assisting the patient to obtain the needed dental and/or medical care. The care of people infected with HIV or who have AIDS is a rapidly changing field, and patients may benefit when greater expertise is available. At the same time, routine dental care

can and should be available from dental professionals."⁴

A 1986 article by Schwartz⁵ stressed the fact that dentists are often the first to recognize the signs of AIDS in a patient: "AIDS patients are also very susceptible to opportunistic infections that have oral manifestations, and, as a result, dentists are in a prime position for early detection of AIDS or ARC. Such conditions as hairy leukoplakia, cervical lymphadenopathy, Kaposi's sarcoma in the mouth, unresolved candidiasis, recurrent herpetic infections and papillomas, may all be signs of AIDS. Squamous cell carcinomas, non-Hodgkins lymphomas, and malignant melanomas in the oral cavity may also be signs of AIDS or ARC."

The Case Of Hamel v. Malaxos

Quebec Court Judge André Soumis's November 25, 1993, ruling in the case of *Hamel v. Malaxos* may prove to be one of the most important civil rights and discrimination judgments in the history of dentistry.

This judgment relates to the rights of a patient who informed his dental office that he was HIV seropositive, and then refused to allow the dentist to discriminate against him in rendering dental treatment.

Judgments in small claims court are generally only a few lines in length, although they occasionally run to a page or two. However, Judge Soumis considered this issue to be so important that he rendered an 86-page judgment. To some extent, it reviews the history of medicine and how doctors should behave in the face of plagues or dangerous infectious diseases. It also includes extracts from the testimony and authorities concerning the exposure risks faced by health-care professionals in the treatment of AIDS, and discusses the extent of this risk. In addition, Judge Soumis analyses whether or not HIV-positive individuals belong in the categories of people who are protected against discrimination under Quebec law, and then determines whether or not the dentist involved has, in

fact, discriminated against Mr. Hamel.

In searching for precedents as to whether an HIV-positive person who has not developed AIDS or an AIDS-related illness is protected by Quebec human rights legislation, Judge Soumis focused on two categories defined in article 10 of the Charter of Human Rights and Freedoms (**Table I**): "sexual orientation" and "handicap."⁵

The judge did not pursue the "sexual orientation" aspect to any great extent. However, in a lengthy discussion of HIV-positive and AIDS patients, his judgment states that the disease, in the minds of the population, has been particularly associated with male homosexuals. But Judge Soumis does dwell on the question of "handicap." He reviews insights from numerous medical authorities, and eventually concludes that an individual who is HIV positive is, in effect, a physically-handicapped person.

In addition to these medical authorities, Judge Soumis states that he searched the reported judgments and legal authorities, and that he found one relevant judgment. Rendered by the Ontario Human Rights Commission, it established that an HIV-positive person is handicapped under Ontario's human rights legislation (**Table II**).

The case in question was that of *Jerome v. Paul DeMarco*. In this judgment, the Ontario Board of Inquiry (a human rights tribunal) held that AIDS is a handicap, and that dental treatments are "services" within the meaning of the Ontario Human Rights Code (**Table II**).

It is particularly interesting to consider the two cases — *Hamel v. Malaxos* and *Jerome v. DeMarco* — together. Dr. Malaxos was held to have committed an offence under Quebec's human rights legislation,⁶ and was condemned to pay exemplary damages to Mr. Hamel, while Dr. DeMarco was found innocent of the charge of discriminating against Mr. Jerome. Nevertheless, the principles that ultimately led Judge Soumis to rule against Dr. Malaxos in *Hamel v. Malaxos* were first set

Table I

Quebec Charter of Human Rights and Freedoms (excerpts)*

Whereas every human being possesses intrinsic rights and freedoms designed to ensure his protection and development;

Whereas all human beings are equal in worth and dignity, and are entitled to equal protection of the law;

Whereas respect for the dignity of the human being and recognition of his rights and freedoms constitute the foundation of justice and peace;

Whereas the rights and freedoms of the human person are inseparable from the rights and freedoms of others and from the common well-being;

Whereas it is expedient to solemnly declare the fundamental human rights and freedoms in a Charter, so that they may be guaranteed by the collective will and better protected against any violation;

Therefore, Her Majesty, with the advice and consent of the National Assembly of Quebec, enacts as follows:

10. Every person has a right to full and equal recognition and exercise of his human rights and freedoms, without distinction, exclusion or preference based on race, colour, sex, pregnancy, sexual orientation, civil status, age except as provided by law, religion, political convictions, language, ethnic or national origin, social condition, a handicap or the use of any means to palliate a handicap.

Discrimination exists where such a distinction, exclusion or preference has the effect of nullifying or impairing such right.

12. No one may, through discrimination, refuse to make a juridical act concerning services ordinarily offered to the public.

49. Any unlawful interference with any right or freedom recognized by this Charter entitles the victim to obtain the cessation of such interference and compensation for the moral or material prejudice resulting therefrom.

In case of unlawful and intentional interference, the tribunal may, in addition, condemn the person guilty of it to exemplary damages.

*R.S.Q., C.C-12

out in the *Jerome v. DeMarco* judgment.

The Case Of Jerome v. DeMarco

Mr. Jerome arrived at Dr. DeMarco's office at a pre-appointed time and advised the receptionist that he was HIV positive. The intended treatment was a prophylaxis and scaling, which was to be carried out by the dental hygienist. However, when Dr. DeMarco learned that Mr. Jerome was HIV positive, he told Mr. Jerome that he would reschedule his appointment so that he could treat Mr.

Jerome himself, at the end of the afternoon, that same day.

Dr. DeMarco had previously scheduled appointments throughout the day, and was not available to provide Mr. Jerome's treatment himself until late that afternoon. He did not want the dental hygienist to do the treatment, given the circumstances. Mr. Jerome agreed to return to Dr. DeMarco's office for treatment at the end of the day, but cancelled that appointment and never returned to Dr. DeMarco's office.

Since Mr. Jerome was not treated like a regular patient, but was rescheduled because he was



Table II

Ontario Human Rights Code (excerpts)*

The relevant parts of the sections:

1. Every person has a right to equal treatment with respect to services, goods and facilities, without discrimination because of ... handicap.
2. No person shall infringe or do, directly or indirectly, anything that infringes a right under this Part.

*S.O. 1981, C. 53, as amended, 1981.

HIV positive, the Board of Inquiry held that he had been treated differently from other patients. The question was: had he been *discriminated* against.

It was up to Dr. DeMarco to prove that he had not discriminated against Mr. Jerome. At the hearing, Dr. DeMarco established that the treatment required by Mr. Jerome, given that the patient was HIV positive, would likely have involved curettage and local anesthetic, which could not have been done by the hygienist. Furthermore, Dr. DeMarco's appointment book clearly established that he would not have been available to perform the procedure himself until late that afternoon.

The board, having seen Dr. DeMarco's appointment book, was satisfied that he was occupied throughout the day, and that the earliest time he could have treated Mr. Jerome himself would have been at the end of the day. Consequently, the board held that there had been no illegal discrimination. That is to say, the rescheduling was related to the type of treatment the patient required, and not to the fact that he was HIV positive.

These facts differ from the facts in *Hamel v. Malaxos*. When Dr. Malaxos learned that Mr. Hamel was HIV positive, he arranged for the patient to go to a local hospital rather than treat him in his office. The patient contended that he was not a "leper" and should not be treated differently from anyone else.

Dr. Malaxos did not establish that Mr. Hamel required a procedure that he could not have carried out immediately. Nor did he establish that the original appointment called for the patient to be treated by the dental hygienist or

some other person in the office, as had been the situation in *Jerome v. DeMarco*.

In *Hamel v. Malaxos*, the judge agreed with Dr. Malaxos that he had no statutory, ethical or contractual obligation to furnish dental treatment to Mr. Hamel. It is well established that a dentist has the right to decide whether or not to accept a particular individual as a patient. However, the judge concluded that Mr. Hamel's handicap was the *reason* for Dr. Malaxos's refusal to provide treatment, which is forbidden by human rights legislation.

Judge Soumis cited numerous authorities to the effect that the law pertaining to human rights legislation must be interpreted very broadly⁶ and, furthermore, that the question of whether discrimination was intentional or not is not important. In fact, it is the effect on the person against whom the discriminatory act is carried out — i.e. refusal to render a service — that must be considered.

Conclusion

The conclusion reached by Judge Soumis in *Hamel v. Malaxos* was that an HIV-positive person, or any other handicapped person, should not be treated differently from any other patient. In effect, the patient's requirement for treatment, by itself, must determine how, and by whom, the patient will be treated.

His review of medical authorities led Judge Soumis to the conclusion that HIV infection is not easily transmitted if proper infection control and sterilization procedures are followed. He also concluded that these types of procedures should generally be available in all dental offices, and

that all patients — regardless of their HIV status — should be treated with adequate care and sterilization precautions in an effort to prevent the transmission of disease. Judge Soumis concluded that Dr. Malaxos had no legally valid reason for refusing to treat Mr. Hamel, and was therefore guilty of having illegally discriminated against his patient.

These two judgments may provide some starting points for the development of legal guidelines with respect to the treatment of HIV-seropositive patients by Canadian dentists. Although these two recent judgments were not rendered by courts or tribunals at a high level of the legal hierarchy, they are important. Both judgments are carefully reasoned and are based on solid precedents and authorities, both legal and medical. Therefore, it is important for dentists to be aware of the principles established by these cases:

1. Anyone who is HIV seropositive qualifies as a "handicapped person" within the parameters of Canadian human rights legislation.
2. If health services are delayed or withheld from such a person because of his or her condition, he or she can claim real and/or exemplary damages from the dentist, and possibly use other legal recourses as well.
3. However, if there is a genuine health-based need to arrange alternative health services for an HIV-seropositive patient, this may be used as a defence in legal proceedings, provided that it would not have been prudent for the dentist to proceed with any regular treatment, without delay, as would have been provided to any other patient.

There are a number of aspects arising from the two recent judgments that need to be explored further in order to understand the legal obligations of a dentist in dealing with HIV-positive patients:

1. A dentist should treat every patient as though he or she were HIV positive.

2. When referring an HIV-seropositive patient to a special high-risk centre (hospital, institution, university, etc.) the dentist should be cautious to do it in a way that does not discriminate against the patient. The dentist should simply make this an option available to the patient. It should be the patient who decides where he or she will be treated.
3. Attention should also be given to the problems that could arise if the dentist's regular patients leave him or her because they have learned that their dentist treats AIDS patients, or patients with infectious diseases. ■

Dr. Graham is an assistant professor of preventive and community dentistry, faculty of dentistry, McGill University, and a partner in McDougall, Caron, a Montreal law firm.

Dr. Miller is an assistant professor in the department of preventive and community dentistry, faculty of dentistry, McGill University.

Dr. Harel-Raviv is head of the department of preventive and community dentistry, faculty of dentistry, McGill University.

Reprint requests to: Dr. Mili Harel-Raviv, Head, Preventive and Community Dentistry, Faculty of Dentistry, McGill University, 740 Dr. Penfield Ave., Montreal, Quebec, Canada H3A 1A4.

References

1. Canadian Human Rights Reports, Vol. 16, Decision 43, November 1992.
2. Crawford, P.R. AIDS and Discrimination; The Windsor Case. *J Can Dent Assoc* 61:25-27, 1995.
3. *Hamel v. Malaxos*, Cour du Québec, District of Joliette, No. 730-32-000370-929 (Small Claims Court), Judge Soumis, 1994.
4. Norbert Gilmour: "HIV Disease: Present Status and Future Directions." *Oral Surg Oral Med Oral Pathol* 73(2):236-243, 1992.
5. Schwartz, S. Infection Control in the Dental Office: A Realistic Approach. *JADA* 112:459-464, 1986.
6. E.G. Ontario Human Rights Commission and *O'Malley v. Simpsons-Sears*, 2 S.C.R. 536, p. 547, 1985.

AMERICAN DENTAL ASSOCIATION

OCTOBER 7-11, 1995

136TH ANNUAL SESSION



PLEASE SEND INFORMATION ON THE 1995 ANNUAL SESSION

NAME

ADA MEMBERSHIP, IF APPLICABLE

ADDRESS

CITY, STATE, ZIP

COUNTRY, IF NOT USA

RETURN TO:

COUNCIL ON ADA SESSIONS
AND INTERNATIONAL PROGRAMS

AMERICAN DENTAL ASSOCIATION

211 EAST CHICAGO AVENUE
CHICAGO, ILLINOIS 60611-2678 USA

ADA[®]

JOURNAL

June/
Juin
1995
Vol. 61
No. 6

INFECTION CONTROL



Dentistry and Tuberculosis In the 1900s

P.D. Riben, MD, M.H.Sc., FRCPC

J.B. Epstein, DMD, MSD

R.G. Mathias, MD, FRCPC

ABSTRACT

The number of new cases — or incidence — of tuberculosis is increasing in nearly every region of the world. A number of forces have resulted in the increased incidence of TB in developed countries, including the HIV epidemic, homelessness, and emigration from highly endemic regions. Although the number of new cases in Canada is relatively constant, the TB experience in the United States serves as a reminder that this situation could change rapidly. The appearance of multidrug-resistant tuberculosis has added to the urgency of situation.

The basic methods of preventing TB transmission include preventing the release of the organism into the air, removing the organism from the air, and preventing the inhalation of the organism. Identifying and appropriately treating every person with active tuberculosis is an extremely important component of the control strategy; adequate ventilation, filtering air, and ultraviolet germicidal irradiation are methods used to remove the organism from the air; and masks and other personal protective devices, such as high-efficiency particulate air filters (HEPA), have been suggested as a means of preventing inhalation of the organism. In addition, identifying new TB infections and using chemoprophylaxis often prevents infection from progressing to active disease.

Given the route by which tuberculosis is transmitted, it is necessary for both dentists and allied dental personnel to be aware of the risks they may face in day-to-day practice, and the means by which they can protect themselves and their patients.

SOMMAIRE

Dans presque toutes les régions du monde, le nombre de nouveaux cas de tuberculose — ou son incidence — est à la hausse. Dans les pays industrialisés, certains facteurs, dont l'épidémie de contaminations par le virus HIV, le phénomène des sans-abri et l'émigration des régions très endémiques, ont entraîné une incidence accrue de ces cas. Bien que le nombre de cas nouveaux au Canada reste relativement constant, l'expérience de la tuberculose aux États-Unis nous rappelle que la situation pourrait changer rapidement. L'apparition de la tuberculose multirésistante aux drogues rend la situation encore plus urgente.

Parmi les principales méthodes pour prévenir la transmission de cette maladie, mentionnons la prévention de la libération du germe dans l'air, son élimination et la prévention de son inhalation. Déterminer et traiter comme il se doit toute personne atteinte de tuberculose évolutive est un élément extrêmement important de la

stratégie qu'on doit déployer pour vaincre cette maladie; une aération adéquate, la filtration de l'air et une irradiation germicide à l'ultraviolet sont des méthodes pour éliminer le germe de l'air; et les masques ainsi que d'autres appareils protecteurs personnels comme le super-efficace filtre d'air particulaire ont été suggérés comme moyens pour en prévenir l'inhalation. De plus, le dépistage des nouveaux sujets infectés et le recours à la chimioprophylaxie empêchent souvent l'infection de passer au stade évolutif.

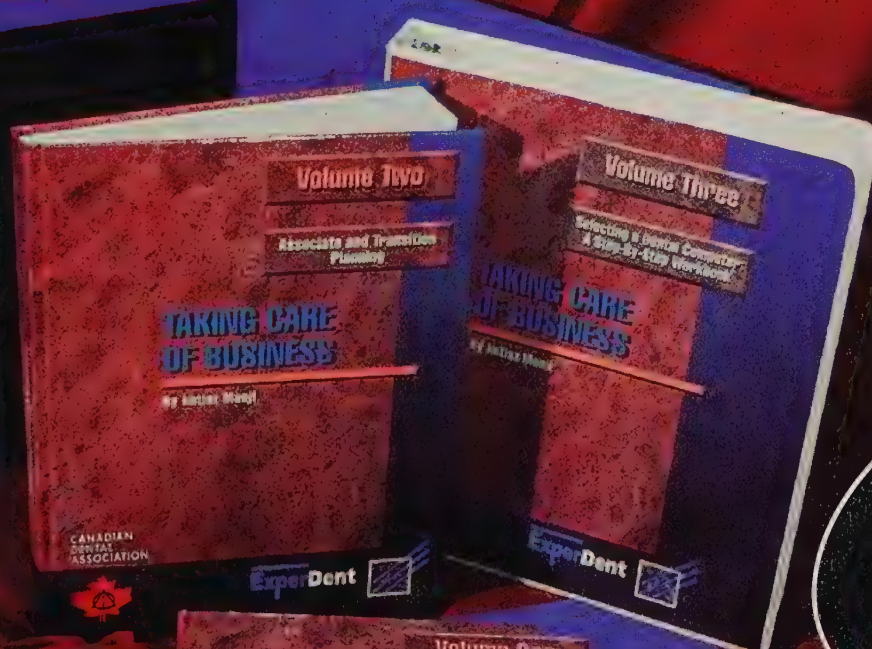
Étant donné la voie par laquelle se transmet la tuberculose, il importe que tant les dentistes que le personnel dentaire allié connaissent les risques qu'ils courent dans l'exercice quotidien de leur profession et les moyens qu'ils peuvent prendre pour se protéger, eux et leurs patients.

Introduction

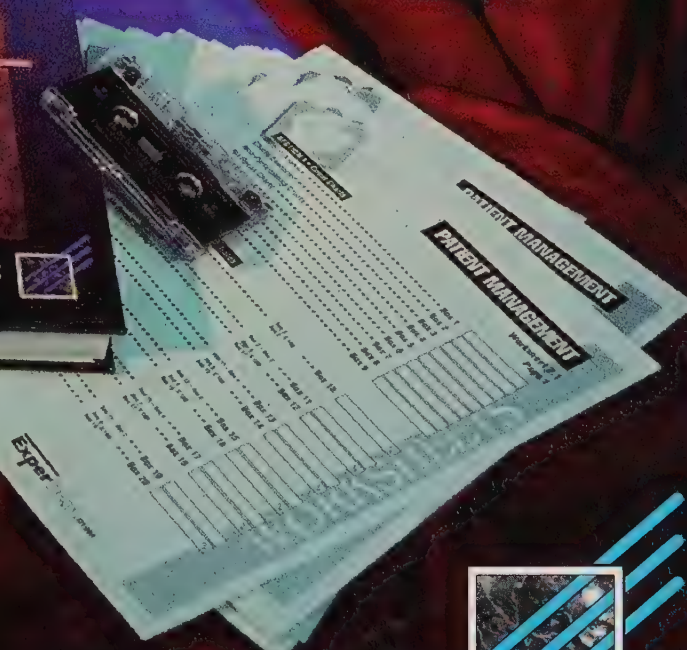
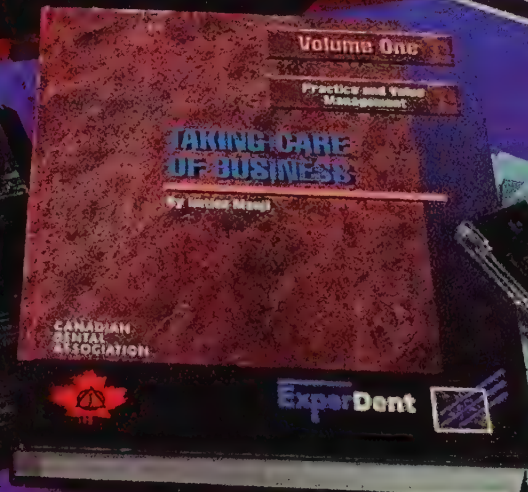
Ten years ago, tuberculosis was considered to be on the verge of elimination in Canada, the United States, and Western Europe, and the programs designed to control tuberculosis were reduced. However, subsequent events have led to an increased incidence of TB infection and disease in some of these regions. This, coupled with the emergence of multidrug-resistant organisms, has necessitated a reconsideration of the reduction in prevention and control programs.



The Canadian Dental Association Taking Care of Business



“Developed in partnership with CDA by ExperDent Consultants.”



See next page for more details...

Taking Care of Business is an essential resource for every dentist!

Over two years in development by the Canadian Dental Association in partnership with ExperDent Consultants, ***Taking Care of Business*** is the most extensive project in practice management that the CDA has ever undertaken. We went to the experts in Canadian dental practice management to bring you the most up-to-date and thorough practice management materials available anywhere in North America!

Volume 1 • Practice and Value Management

- Why practice value is important
- Understanding your practice's potential
- How to develop a financial plan
- Examining your break even point
- Patient management & recall strategies
- Case management & treatment acceptance
- Collections & payment control techniques
- **260 pages plus worksheets and cassettes**

Volume 2 • Associate and Transition Planning

- Key management areas for dentists
 - Why growth stops for most dentists
 - Transition choices for new dentists
 - Negotiating successful associateships
 - Designing and building a dental practice
 - Compensation plans for associates
 - Factors in sale/purchase transactions
 - **300 pages plus cassettes**
- The dental career cycle
 - Factors in retirement planning
 - Starting a new practice
 - Negotiating successful partnerships
 - Key factors in legal agreements
 - Practice valuation methods
 - Managing staff & patients during transitions

Volume 3 • Selecting a Dental Computer

- Preventing costly mistakes
 - Why computerizing is important
 - Review of the basics
 - How to evaluate the options
 - Understanding operating system environments
 - Evaluating support and maintenance
 - **150 pages plus worksheets**
- Uncovering hidden costs
 - How to choose a vendor
 - Learn about purchase contracts
 - Hardware & software needs
 - Installation and training
 - Getting comfortable with the language

Name: _____
Address: _____
Suite #: _____ City: _____
Prov: _____ Postal: _____
Telephone: (_____) _____
CDA Membership #: _____

☐ Cheque/money order enclosed.☐ Visa ☐ MasterCard Expiry Date: _____

Credit Card #: _____

Signature: _____

Mail or fax order form and payment to: **Canadian Dental Association**,
Member Services, 1815 Alta Vista Drive, Ottawa, ON, K1G 3Y6
Order today! Call CDA toll-free 1-800-267-6354 or fax 1-613-523-7736.
Please allow 8 weeks for delivery.

Taking Care of Business • Volume 1
Practice & Value Management

Taking Care of Business • Volume 2

Associate & Transition Planning

Taking Care of Business • Volume 3
Selecting a Dental Computer

Subtotal

Shipping & Handling
\$5.50 per volume ordered

Subtotal

GST: 7% of subtotal (#R106845209)

PST: 8% of subtotal (Ontario only)

TOTAL \$

Member	Regular	Total
\$200	\$300	
\$150	\$250	
\$140	\$190	

Shipping & Handling
 per volume ordered

Subtotal

al (#R106845209)

total (Ontario only)

TOTAL \$



Tuberculosis is caused by *Mycobacterium tuberculosis*. As with many other organisms, infection does not necessarily lead to disease. In immunologically competent individuals, the lifetime risk that active disease will develop after infection is 10 per cent. This risk increases to seven to 10 per cent per-year in AIDS patients.

The respiratory transmission of TB, and the changes in the community that influence the prevalence of the organism and active disease, make it essential for dentists and other health-care workers to be aware of the epidemiology of *M. tuberculosis*. Otherwise, dentists, hygienists, office staff, and patients may become infected and serve as a source of transmission to others.

Epidemiology

Incidence and Trends

The number of TB cases reported worldwide in 1990 was 3.8 million.¹ However, estimates provided by the World Health Organization (WHO) indicate that the number of cases in 1990 was actually closer to 7.5 million. Clearly, the incidence of tuberculosis is increasing. If the current trend continues, there will likely be 90 million new cases of disease and 30 million deaths due to TB infection during the 1990s.²

Increases in TB incidence are being seen in all areas of the world, but the greatest number of new cases are occurring in South-east Asia, Sub-Saharan Africa and Eastern Europe.

In contrast to the worldwide trend, the incidence of active disease in Canada, the U.S., Western Europe, Japan, Australia and New Zealand had been declining for most of the 20th century. Unfortunately, this downward trend was interrupted in the mid-1980s, with the number of new cases increasing by 30 to 50 per cent in parts of Europe and the U.S.^{3,4} In Canada, the annual number of new cases has now stabilized, with about 2,000 new cases being reported each year.⁵

The increase in the number of TB cases in developed countries has been attributed to:

1. The HIV epidemic,
2. The increase of homelessness,
3. The increase in the number of IV drug users,
4. The concentration of individuals with either all or some of the above three risk factors into defined areas — further increasing the probability of transmission,
5. A decrease in the resources available to control TB, which limits the ability to find cases and institute treatment before transmission occurs, and
6. The increased immigration from regions where tuberculosis is endemic.^{6,7}

Demographic Characteristics

Increases in the incidence of new TB cases in the U.S. were seen in males and females, in all racial/ethnic groups, and in all age groups.⁸ However, the distribution of increased incidence is not uniform, with the greatest increases occurring in the racial/ethnic minorities. The rates of TB per 100,000 in 1992 ranged from 4.0 in non-Hispanic whites, through to 46.6 in Asian/Pacific Islanders. Foreign-born cases accounted for 60 per cent of the total increase in the U.S, and the number of new cases in the 25- to 44-year-old age group increased by 55 per cent between 1985 and 1992.

In Canada, more than 50 per cent of the new TB cases reported in 1992 occurred in foreign-born individuals, and 37 per cent of the Canadian-born cases involved native people.

Transmission, Infectiousness, and Outbreaks

Mycobacteria are transmitted to humans via one of two routes. One route, the ingestion of contaminated milk, has essentially been eliminated in Canada, the U.S. and Western Europe. This was accomplished through the tuberculin testing of dairy cattle and the pasteurization of milk.

The second route of transmission is nosocomial — via the air. Whenever someone talks, sneezes or coughs, particles are expelled from his or her respiratory tract. Some particles, called droplet nu-

clei, can stay suspended in the air for hours and travel great distances via air currents. If inhaled, the droplet nuclei bypass the upper airway defenses and are deposited in the alveoli of the lung. Once there, the organism can attach, grow, and multiply. In theory, a single organism is sufficient to establish an infection.

Instances of nosocomial transmission have occurred following aerosolization associated with mechanical ventilation,⁹ dressing change,¹⁰ jet irrigation of a thigh abscess,¹¹ and bronchoscopy.¹² Transmission has also occurred because of inadequate ventilation.

Infectiousness is correlated to the quantity of viable bacteria released into the air. This, in turn, is correlated to:

- Acid Fast Bacilli (AFB) seen on direct examination of sputum;^{13,14}
- Disease in the lungs, airways or larynx;
- Frequent cough, induced or otherwise;
- Cavitory disease on chest X-ray;
- Failure to cover the mouth when coughing; and
- Inappropriate or short duration of chemotherapy.

However, even when the factors known to be associated with infectiousness are accounted for, it is not possible to pre-determine how infectious a patient may be. The number of individuals who become infected following exposure to an index patient (using existing methods of case finding and microbiology) is small. If transmission does occur, it is most usually to family members or to others who share the same air space for prolonged periods of time.

Clusters of infection with both sensitive and multidrug-resistant strains of TB have occurred in communities,¹⁵ shelters, prisons, and hospitals. Patients and staff members of these institutions have acquired TB infections.¹⁶⁻¹⁹ With newer techniques of tracing organisms, it has become evident that more people were infected than traditional tracing methods had previously determined.²⁰⁻²² The in-



fectiousness of TB, therefore, may have been underestimated.

Multidrug-Resistant Mycobacterium Tuberculosis

Recently multidrug-resistant tuberculosis (MDR TB) has appeared.^{23,24} In the U.S., most of the MDR TB isolates have been found in AIDS patients. To date, infection and disease with MDR TB is rare in Canada. When it is found, it is usually in an individual who was born in a country where TB is highly endemic.

Treatment regimes that were previously used with good success are much less likely to work in patients where the organism is resistant to one or more of the standard drugs. Up to six antibiotics are recommended for treating patients with disease resulting from MDR TB.²⁵ The response to therapy, particularly in the immunocompromised, is frequently unsatisfactory.

Occupational Health

In a review of tuberculosis and the health-care worker (HCW), Sepkowitz²⁶ noted that the occupational hazards of tuberculosis infection were not recognized until the 1950s. Recent reports indicate that health-care workers remain at risk of becoming infected in non-outbreak²⁷⁻²⁹ as well as outbreak situations.³⁰

More than 100 HCWs in the U.S. have had skin-test conversions after caring for patients with multidrug-resistant tuberculosis, and at least six have died.

Tuberculosis and the Dental Office

A survey of hospital dental departments in the U.S. identified 23 dental providers in 17 institutions (1.5 per cent of providers in those institutions) who had become skin-test positive in the previous year.³¹ The survey also identified five cases of active TB in dental providers that were believed to be due to patient contact. Although transmission from patient to provider has been documented, the risk to dentists remains to be determined. A study of dentists in the Indian Dental Service and Federal Bureau of Prison Dentists re-

Table I

Symptoms Of Active TB

persistent cough > three months
blood in sputum
night sweats
weights loss
fever of unknown origin

vealed that the incidence of positive skin-tests in dentists is similar to the incidence in the general population.³² However, a series of 15 patients developed evidence of TB infection following exposure to a dentist with active pulmonary disease.³³

The presence of tuberculosis in dental workers or their patients is not enough to prove that transmission occurred in a specific dental office, however. A study involving patients and dental workers in a New York City hospital dental clinic was able, by examining the "fingerprints" of TB organisms, to demonstrate that the MDR TB in two dental workers was not transmitted to, or acquired from, clinic patients with TB.³⁴ However, transmission probably did occur from one worker to the other.

Prevention

Principles

In response to evidence suggesting the spread of tuberculosis, American organizations have developed guidelines^{35,36} and regulations³⁷ for preventing the transmission of tuberculosis to other patients and workers. Guidelines are also being developed in Canada, but are not yet complete.

The U.S. guidelines and regulations identify three methods to prevent the transmission of the organism responsible for tuberculosis:

1. Preventing release of the organism into the air;
2. Removing the organism from the air; and
3. Preventing the inhalation of the organism.

Medical surveillance of workers is also identified as a control point, but this is intended to prevent infection from progressing to active disease, to monitor the effective-

Table II

Oral Manifestations Of TB

oral mucosal ulceration (painless or painful)
painful granulation tissue
mobility of teeth
spontaneous exfoliation of teeth
enlargement or mass in the salivary glands
lymphadenopathy

ness of the other measures, and to ensure early diagnosis of cases of active disease.

Probably the most effective method of preventing the release of organisms into the air is to identify and treat people who have active tuberculosis. Not surprisingly, the level of transmission risk is greatest in patients with unrecognized pulmonary or laryngeal tuberculosis. Realistic attempts to limit exposure require the patients who are at risk to be identified, investigated and treated. Educating health-care providers (and the public) about risk markers, and the signs and symptoms of tuberculosis (**Tables I and II**) is one component of this strategy. However, because TB symptoms may be non-specific, it may be difficult to recognize persons with active disease.

Other forms of source control (i.e. preventing transmission of organisms into the air) include decreasing the frequency of coughing, covering the mouth when coughing, and the use of local exhaust fans and ducts.

Several options are available for removing the TB organism from ambient air. The first solution is to ensure adequate ventilation, which, in the case of tuberculosis, is defined as at least six air changes per hour. Increased heating and air-conditioning costs, plus the cost of renovations, make this approach somewhat expensive, however. A less-expensive alternative is the recirculation of air through high-efficiency particulate air (HEPA) filters, which removes the TB organism from the air, but keeps heating and air-conditioning costs down.

**Table III****Routine Precautions**

update medical history	
knowledge of signs and symptoms of tuberculosis	
hand washing	
instrument sterilization	
surface disinfection	
delay elective treatment until medical evaluation of suspicious cases.	
reduce droplet nuclei formation:	minimize splash, splatter, aerosols
	rubber dam, high volume suction
	avoid use of ultrasonic instruments
	do not use ultrasonic cleaning
	avoid use of water spray
use approved masks	

Another option for preventing the transmission of TB to other patients is to place infected patients in rooms that have lower air pressure relative to the adjoining spaces. (The air from these negative pressure rooms should be vented to the outside.)

The use of ultraviolet light germicidal irradiation (UVGI) has also been proposed as a method of eliminating the TB organism from the air. Organisms passing close to the light are rendered non-viable. Although the use of UVGI has the potential to be an inexpensive method to clean the air, its effectiveness has not yet been proven in real life situations. One concern is the need for proper maintenance and placement of the light so that it does not result in any of the adverse effects associated with ultra violet irradiation.

Preventing the inhalation of the organism is the third method of preventing the spread of tuberculosis. Earlier guidelines recommended that standard surgical masks should be worn when people came into contact with a patient with active tuberculosis. Re-

cently, however, it has been recognized that standard surgical masks do not adequately filter *Mycobacterium tuberculosis*. As a result, the U.S. Occupational Health and Safety Agency (OSHA) has issued a regulation requiring all workers exposed to tuberculosis to wear HEPA respirators. Although evidence documenting the benefit of masks does not exist, the U.S. Centers for Disease Control has recommended that exposed workers should wear masks that are 95 per cent efficient at filtering out 2.0 micron particles.

It must be noted that while standard surgical masks don't filter out the required 95 per cent of 2.0 micron particles, two outbreaks have been controlled and terminated by adopting specific procedures that included the use of molded masks by all employees entering patient rooms. These procedures also involved early identification of tuberculosis cases and the provision of adequate ventilation, including the housing of patients with active disease in negative-pressure rooms.

The use of a vaccine to protect against tuberculosis is controversial. When tested in trials, the effectiveness of the BCG vaccine has been found to range from 0 through to 70 per cent. This lack of protection, coupled with the difficulty in interpreting skin tests following immunization, has resulted in a lack of endorsement for the vaccine and, consequently, it is not widely used in Canada.

The Mantoux skin test is used to identify people who have been exposed and infected with *Mycobacterium tuberculosis*. A positive reaction is determined by the diameter of the induration at the site of the injection. In effect, a positive test is considered to be indicative of infection, while a negative test indicates that no previous infection has occurred. Tests in which the degree of induration is not great enough to be definitely indicative of infection may be the result of either a cross-reaction to another organism, a reaction to the BCG vaccine, or a weak reaction to a previous infection. By following the test results over a period of time, it is possible to determine

when and if infection has occurred. If infection has occurred, the antibiotic INH can be used as a chemoprophylactic agent to markedly diminish the probability of the infection proceeding on to active disease.

Dental Practices

Infection control procedures for dental practices should include a knowledge of the signs and symptoms of active tuberculosis (Tables I and II), an updated medical history related to respiratory illness, and, in cases with signs and symptoms suspicious of TB, referral for medical evaluation. Elective dental treatment should be delayed until the medical consultation is complete. Routine infection control procedures (Table III) should be practised as well, including hand-washing prior to and following patient contact, instrument sterilization, and disinfection of contaminated working surfaces. Masks should be worn when aerosols are produced during dental treatment. Avoiding the use of water spray from the triplex syringe, as well as the use of rubber dam and high-volume suction, will reduce aerosols. Phenol and glutaraldehyde are both effective disinfectants in the presence of sputum following drying on a surface.³⁸ Ineffective agents include quaternary ammonium compounds, chlorhexidine gluconate, iodophor, and 70 per cent alcohol.

Cost-benefit studies^{39,40} on respirators make the use of HEPA respirators questionable. Given that TB outbreaks in staff and patients can be successfully terminated by using measures designed to identify, treat, and isolate patients with active disease in negative pressure rooms, it is questionable if the use of HEPA respirators can be justified. Standard molded surgical masks coupled with other infection control precautions (particularly early identification and treatment of patients with active disease) should be sufficient. The apparently low occupational risk of tuberculosis in dental providers may be due to the routine use of these infection control precautions. However, as with all recommendations, an improved under-



standing of the epidemiology and the disease process may make it necessary to modify current recommendations. ■

Dr. Riben is director of the Health Facility Epidemiology/Environmental Health, Vancouver Hospital and Health Sciences Centre, and an associate professor in the department of pathology and laboratory medicine, University of British Columbia.

Dr. Epstein is head of the division of oral medicine and clinical dentistry, Vancouver Hospital and Health Sciences Centre; a medical-dental staff member, British Columbia Cancer Agency; and a clinical professor in the faculty of dentistry, University of British Columbia.

Dr. Mathias is a professor and head of the division of public health practices, department of health care and epidemiology, University of British Columbia.

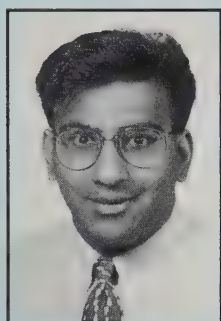
Reprint requests to: Dr. J.B. Epstein, British Columbia Cancer Agency, 600 W10th Ave., Vancouver, B.C. V5Z 4E6.

References

1. Raviglione, M.C., Snider D.E. and Kochi, A. Global Epidemiology of Tuberculosis. Morbidity and Mortality of a Worldwide Epidemic. *JAMA* 273:220-226, 1995.
2. *Morbidity and Mortality Weekly Report* 42(49), 1993.
3. CDC. Expanded Tuberculosis Surveillance and Tuberculosis Morbidity — United States, 1993. *MMWR* 43:361-366, 1994.
4. Raviglione, M.C., Sudre, P., Reider, H.L. et al. Secular trends of tuberculosis in Western Europe. *Bull World Health Organ* 1993 71:297-306, 1993.
5. Statistics Canada. Annual Tuberculosis Statistics. Catalogue number 82-220. Ministry of Industry, Science and Technology, 1994.
6. Bloom, B.R. and Murray, C.J.L. Tuberculosis: Commentary on a Reemergent Killer. *Science* 1992 257:1055-1064, 1992.
7. Buskin, S.E., Gale, J.L., Weiss, N.S. et al. Tuberculosis risk factors in adults in King County, Washington, 1988 through 1990. *Am J Public Health* 84:1750-1756, 1994.
8. Cantwell, M.F., Snider, D.E., Cauthen, G.M. et al. Epidemiology of Tuberculosis in the United States, 1985 through 1992. *JAMA* 272:535-539, 1994.
9. Haley, C.E., McDonald, R.C., Rossi, L. et al. Tuberculosis epidemic among hospital personnel. *Infect Control Hosp Epidemiol* 10:204-210, 1989.
10. Frampton, M.W. An outbreak of tuberculosis among hospital personnel caring for a patient with a skin ulcer. *Ann Intern Med* 117:312-313, 1992.
11. Hutton, M.D., Stead, W.W., Cauthen G.M. et al. Nosocomial transmission of tuberculosis associated with a draining abscess. *J Infect Dis* 161:286-295, 1990.
12. Cantanzaro, A. Nosocomial tuberculosis. *Am Rev Respir Dis* 125:559-562, 1982.
13. Rouillion, A., Pendrizet, S. and Parrot, R. Transmission of tubercle bacilli: The effect of chemotherapy. *Tubercle* 57:275-299, 1976.
14. Loudon, R.G. and Spohn, S.K. Cough frequency and infectivity in patients with pulmonary tuberculosis. *Am Rev Respir Dis* 99:109-111, 1969.
15. FitzGerald, J.M. Three cluster outbreaks of tuberculosis in British Columbia. *CCDR* 20:1-3, 1994.
16. Ramirez, J.A., Anderson, P., Herp S. et al. Increased rate of tuberculin skin test conversion among workers as a university hospital. *Infect Control Hosp Epidemiol* 13:579-581, 1992.
17. Fraser, V.J., Kilo, C.M., Bailey, T.C. et al. Screening of physicians for tuberculosis. *Infect Control Hosp Epidemiol* 15:95-100, 1994.
18. Fagan, M.J. and Poland, G.A. Tuberculin skin testing in medical students: A survey of U.S. medical schools. *Ann Intern Med* 120:930-931, 1994.
19. Pearson, M.L., Jereb, J.A., Frieden, T.R. et al. Nosocomial transmission of multidrug-resistant *Mycobacterium tuberculosis*. A risk to patients and health-care workers. *Ann Intern Med* 117:191-196, 1992.
20. Small, P.M., Hopewell, P.C., Singh, S.P. et al. The epidemiology of tuberculosis in San Francisco. A population-based study using conventional and molecular methods. *N Engl J Med* 330:1703-1709, 1994.
21. Alland, D., Kalkut, G.E., Moss, A.R. et al. Transmission of tuberculosis in New York City. An analysis by DNA fingerprinting and conventional epidemiologic methods. *N Engl J Med* 330:1710-1716, 1994.
22. Genewein, A., Telenti, A., Bernasconi, C. et al. Molecular approach to identifying route of transmission of tuberculosis in the community. *Lancet* 342:841-844, 1993.
23. Frieden, T.R., Sterling, T. and Pablos-Mendez, A. The emergence of drug-resistant tuberculosis in New York City. *N Engl J Med* 328:521-526, 1993.
24. Fischl, M.A., Uttamchandani, R.B., Diakos, G.L. et al. An outbreak of tuberculosis caused by multidrug-resistant tubercle bacilli among patients with HIV infection. *Ann Intern Med* 117:177-183, 1992.
25. Peloquin, C.A. and Berning, S.E. Infection caused by *Mycobacterium tuberculosis*. *Annals Pharmacol* 28:72-84, 1994.
26. Sepkowitz, K.A. Tuberculosis and the health care worker: A historical perspective. *Ann Intern Med* 120:71-79, 1994.
27. Ramirez, J.A., Anderson, P., Herp, S. et al. Increased rate of tuberculin skin test conversion among workers at a university hospital. *Infect Control Hosp Epidemiol* 13:579-581, 1992.
28. Fraser, V.J., Kilo, C.M., Bailey, T.C. et al. Screening of physicians for tuberculosis. *Infect Control Hosp Epidemiol* 15:95-100, 1994.
29. Fagan, M.J. and Poland, G.A. Tuberculin skin testing in medical students: A survey of U.S. medical schools. *Ann Intern Med* 120:930-931, 1994.
30. Pearson, M.L., Jereb, J.A., Frieden, T.R. et al. Nosocomial transmission of multidrug-resistant *Mycobacterium tuberculosis*. A risk to patients and health care workers. *Ann Intern Med* 117:191-196, 1992.
31. Personal communication, Dr. R. Harlow, Roerig Fellow in Hospital Dental Practice, American Association of Hospital Dentists.
32. CDC. Self-reported tuberculin skin testing among Indian Health Services and Federal Bureau of Prison Dentists — 1993. *MMWR* 43:209-211, 1994.
33. Roderick-Smith, W.H., Mason, D.K., Davies, P. et al. Intra-oral and pulmonary tuberculosis following dental treatment. *Lancet* 1:842-844, 1982.
34. Cleveland, J.L., Kent, J., Gooch, B.F. et al. Multidrug-resistant *Mycobacterium tuberculosis* in an HIV dental clinic. *Infect Control Hosp Epidemiol* 16:7-11, 1995.
35. CDC. Guidelines for preventing the transmission of tuberculosis in health care settings, with special focus on HIV-related issues. *MMWR* 39(RR-17), 1990.
36. CDC. Guidelines for preventing the transmission of tuberculosis in health care facilities 1994. *MMWR* 43(RR-13), 1994.
37. Decker, M.D. OSHA Enforcement policy for occupational exposure to tuberculosis. *Infect Control Hosp Epidemiol* 14:689-693, 1993.
38. Best, M., Sattar, S.A., Springthorpe, V.S. et al. Efficacies of selected disinfectants against *Mycobacterium tuberculosis*. *J Clin Microbiol* 28:2234-2239, 1990.
39. Nettleman, M.D., Fredrickson, M., Good, N.L. et al. Tuberculosis Control Strategies: The cost of particulate respirators. *Ann Intern Med* 121:37-40, 1994.
40. Adal, K.A., Anglim, A.M., Palumbo, C.L. et al. The use of High-Efficiency Air-Filter Respirators to Protect Hospital Workers From Tuberculosis. A Cost-Effectiveness Analysis. *N Engl J Med* 331:169-173, 1994.



Making Great Strides



The summer is in full swing as are preparations for the CDA 1995 Convention. Everything is coming along splendidly as details are being finalized. The Opening Ceremony, Exhibit Hall, special events and Scientific Program are being given their ultimate touches and will be ready for your enjoyment this August 26th to 29th.

The Opening Ceremony is taking on its final form as we fine tune the specifics and technicalities on our line-up of entertainment. The performances are sure to delight the young and old alike. That's about all we can say at this time without ruining your surprises and expectations.

We are pleased to announce that the Exhibit Hall is sold-out. You will notice once the doors open on Monday, August 28th at 9:00 a.m. that we have a newly designed hall. For the first time to be used in North America we have given a new layout and European look to the floor plan. The list of preliminary exhibitors (as of last month) will be found in our subsequent convention pages. As you look through the list, plan now to set aside time on Monday and Tuesday, August 28th and 29th to visit the trade exhibition and order the supplies and equipment you will need in the coming months.

The course for the Fun Run has also been completed. A significant stretch of the course will take place along the Rideau Canal — making for a lovely run or walk for our energetic participants. We also have means of clocking time for the zealous athletes in the group.

Our Convention office is diligently registering dentists, their team and their families. If you haven't already done so, you can mail or fax in your registration or simply give

us a call and register by phone. That's right, during the month of June, we'll be glad to take your registration over the phone. We have taken this unprecedented step to make your enrolment process more convenient. If you have already registered and want to make any changes or additions to your events we'll also be able to do this by phone with a credit card number. Just call us between 8:30 am and 4:30 pm (EDT) at 1-800-267-6354 or at 523-1770 for anyone in the Ottawa region.

The Scientific Program is getting the necessary attention needed to solidify logistical details. We are beginning preparations for putting together the Final Program Book which pre-registered participants will receive approximately 3 weeks prior to the Convention.

For those of you who wish to participate in the Scientific Program, you may want to consider presenting a Table Clinic. It is a great opportunity to become involved and try out your skills and abilities as an instructor. If you have a procedure, technique or some contemporary research you would like to present, a Table Clinic is a great venue through which to share this information. We are still accepting applications for Table Clinics. Call us and we'll send you the information you need to begin your participation.

We are excited about sharing with you the final outcome of the efforts and preparations that have been a part of the CDA 1995 Convention. We trust that you are planning to join us. However, if you haven't registered yet, now is a good time, give us a call — we'd be pleased to assist you. We look forward to welcoming you to Ottawa.

Nalin Bhargava, D.D.S.
Lisa Gifford, D.D.S.
Douglas Smith, D.D.S.
Organizing Committee
CDA 1995 Convention
Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

Tel.: 1-800-267-6354
Fax: (613) 523-3062



OTTAWA 1995

August 26 - 29

PRELIMINARY EXHIBITOR'S LIST

3M Canada Inc.

A

A Bit Better Computing
A-Dec, Inc.
A.R. Medicom Inc.
Abel Computers Ltd.
Adams Brands Inc.
Amadent Corporation
American Dental Association
Apollo
Arcona
Ash Temple Limited
Astra Pharma Inc.
Aurum Ceramic Dental
Laboratories

B

Bank of Nova Scotia
Bayer Dental
Belmont/Takara Co. Can. Ltd.
Benson / Porter
Biodent
Bisco Dental Products
Canada, Inc.
Brasseler Canada
Buffalo / Bolton Dental
Mfg. Inc.
Byte Dental Systems

C

Calcitek, A Company
of Sulzermedica
Canada Microsurgical Ltd.
Canadian Dental Supply
(Ontario) Limited
Canadian Dental Association
Canadian Dental Service
Plans Inc. (CDSPI)
Canadian Hospital
Specialties Ltd.
Canadian Medic Alert
Foundation
Canebsco Reception Room
Subscription Services
CDA Leasing
Centrix, Inc.
Cerum Dental Supplies Ltd.
Cerum Ortho Organizers
Church & Dwight Ltd. / Ltée
Classic Dental Laboratories
Clinical Research Dental
Supplies & Services
Colgate Oral
Pharmaceuticals
Coltene / Whaledent
Colwell Systems Limited
CompuSmile Imaging
Systems Inc.
Cooper Research Limited

D

Dansereau Health
Products Inc.
Den-Mat Corp.
Den-Tal-Ez Inc. / Equipment
Den-Tal-Ez Inc. /
Custom Vacuum
Den-Tal-Ez Inc. / Star Dental
Dent-X
Dentalmac by Healthcare
Communications
Dentech Corporation
Dentsply Canada Ltd.
Designs for Vision, Inc.
Diatech Dental
Duro-Test Canada Inc.

E

Ellman International, Inc.
Exan Business World
Software Inc.

F

Ford Motor Company
of Canada, Limited

G

GC America and Tuttnauer
Glide Floss by Gore

H

Head-to-Toe Uniforms
Healthgroup Financial
Henry Schein Canada
Hoechst-Roussel
Canada Inc.
Hu-Friedy Mfg. Co. Inc.

I

Impact Dental
Laboratory Ltd.
Innova Corp.
International Tissue
Services Inc.

J

J. Morita USA, Inc.
J.F. Jelenko & Co.
Joey Software, Inc.
John O. Butler
Company

K

Keeler Instruments Inc.
Kerr Corporation
Kilgore International, Inc.
Knowell Therapeutic
Technologies Inc.
Kodak Canada Inc.

The Marketplace for All Your Office Needs

Join us in the exhibit hall during the following days of the Convention:

Monday, August 28 9:00 a.m. - 6:00 p.m.

Tuesday, August 29 9:00 a.m. - 6:00 p.m.

The Trade Exhibition will be located in the Ottawa Congress Centre. Plan now to take advantage of face-to-face contact with sales representatives and promotions that will be offered during the show. Also, be sure to bring your draw tickets and deposit them in the ballot boxes placed throughout the exhibit hall.

L

Lac-Mac Limited
Lasedent Technologies

M

M&CC
Marion Merrell Dow Canada
Marus Dental International
Maxim Computer Systems
McNeil Consumer
Products Company
MDT Diagnostic Company
Medi-Dent /CIBC
Equipment Finance
Midland Walwyn
Capital Inc.
Miltex Instrument
Company, Inc.

N

New Image Industries, Inc. /
Acucam
Nobelpharma
Canada Inc.

O

Oral-B Laboratories
Orasoptic Research, Inc.

P

Panasil Products
Panoramic Corporation
Pappa Geppetto's Toys
Victoria Ltd.
Patterson Dental /
Dentaire Canada Inc.
Pennsylvania College
of Technology
Platinum Interactive
Education Systems
Premier / ESPE-Premier
Canada Inc.
Pro-Dentec Canada
Procter and Gamble Inc.

Professional Practice
Builders, Inc.
Professional Practice
Sales Ltd.

S

Safety Syringes, Inc.
Schick Technologies
Sci Can
Septodont Inc. Canada /
Novocol
Shofu Dental Corporation
Siemens Electric Limited
Sinclair Dental Co.
Smilemakers for Children Inc.
Soredex Medical Systems
Southern Dental Industries
Space Maintainers
Specialty Medco Inc. /
Nite White
Steri-Oss
Sulcabras Inc.
Synca

T

Teledyne Water Pik
Canada
Times Mirror Professional
Publishing

U

Unident Limited

V

Vident
Vivident

W

Warner Wellcome
Whitehall-Robins Inc.
Wright Dental Canada
Limited
Wrigley Canada Inc.

FOR YOUR INFORMATION



OTTAWA 1995
August 26 - 29



DENTAL TEAM BONDING

SAVE \$\$\$

**REGISTER NOW
and AVOID
\$30 on-site
registration fee!**

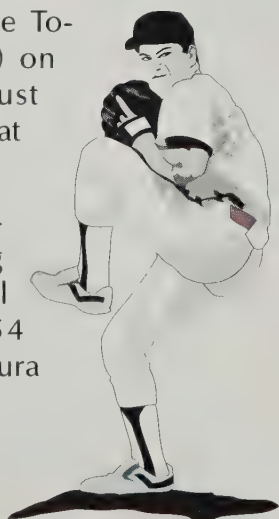
Pre-registered CDA members can register for the CDA 1995 Convention **ABSOLUTELY FREE** and every pre-registered dentist may register two non-dentist staff members for the Convention proper for **FREE**.

Our 1 + 2 = \$0 campaign is only available until July 21, 1995. Enrolment forms received after this date will be returned to the participant(s) who will then be required to register on-site. Each on-site registration is subject to a \$30 administrative fee. Please note that the 1 + 2 = \$0 campaign will not be offered on-site.

LET'S PLAY BALL!

We have reserved some tickets to the triple A baseball game between the Ottawa Lynx (farm team to the Montreal Expos) and the Syracuse Chiefs (farm team to the Toronto Blue Jays) on Tuesday, August 29th. Game starts at 7:05 p.m.

If you are interested in obtaining tickets, please call 1-800-267-6354 and speak to Laura Stephenson.



CONTINUING EDUCATION CREDITS

The CDA Annual Convention is a great place where you can acquire valuable continuing education credits. Every hour spent in a course or a lecture will earn you credits. We will provide proof of attendance which can be presented to your licensing body and counted towards the fulfillment of your continuing education requirements.

RCDCA

Attention all RCDCA / CFDS personnel

Our **80th Anniversary Meet and Greet** will be held Monday, August 28th at 5 p.m. at the Château Laurier Hotel, MacDonald Room during the CDA 1995 Convention.

Come to *Meet and Greet* your friends old and new.

For more information,

please contact Capt. W.S. MacKenzie at the Royal Canadian Dental Corps. Association at 416-488-9735.



OTTAWA 1995
August 26 - 29

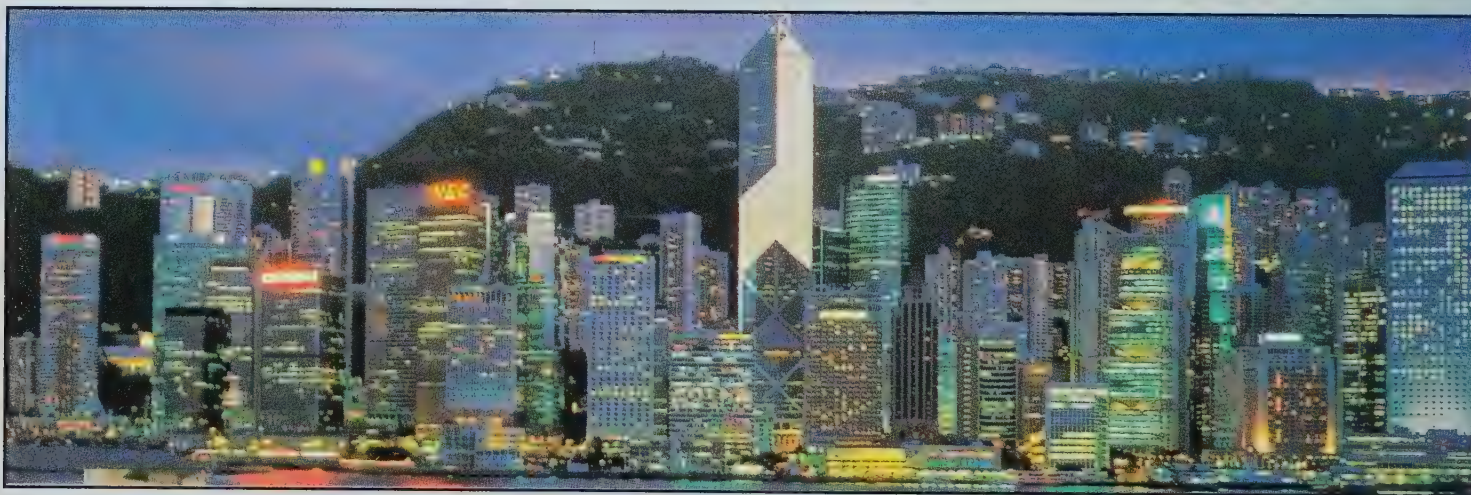
CDA 1995 OUT-OF-COUNTRY SEMINARS

HOLIDAYS EXTRAORDINAIRE FOR BUSINESS AND PLEASURE

The CDA Out-of-Country seminars provide you with an opportunity to meet your professional colleagues in different parts of the world, visit dental clinics and private practices, attend seminars and interact with members of the national dental association. (Tour descriptions are only highlights).

**For more information, contact
Tourcan at 1-800-263-2995
or CDA Conventions at 1-800-267-6354.**

FDI 1995 — HONG KONG: The Gateway to the Orient



Organized by the Hong Kong Dental Association and the World Dental Federation, the FDI 1995 World Dental Congress will take place between October 23rd and 27th. Dental professionals from the world over will gather together for a week of learning and discovery.

Together with Tourcan Vacations, the CDA has organized a comprehensive package for Canadian dentists which includes airfare and 5 nights accommodation (with breakfast) in some of the finest hotels in Hong Kong. Day trips in and around the Hong Kong area have also been arranged.

KENYA (July 13-27, 1995) *A 15 day environmental & photo safari in Africa*

Start with a tour of the exotic city of Nairobi then on to the Masai Mara Game Reserve to begin your safari. Enjoy the game drive of a lifetime in the richest reserve to be found in Kenya! Observe large free roaming herds of elephants, lions, leopards, buffalo, rhinos as well as the wildebeest, gazelle and zebra in their natural habitat. An outing to Lake Naivasha will display nearly 300 species of birds. At Aberdare National Park visit The Ark, a unique lodge which overlooks a large salt lick and waterhole that attracts wildlife both day and night. At the Samburu Reserve, entertainment will be provided by mischievous monkeys while sleeping crocodiles sun themselves by the river.



Often referred to as the Gateway to the Orient, Hong Kong's location enables you to take advantage of exciting post-congress tours into China and other fascinating asian locations. The following post-congress tours are available to choose from: Bali (October 26-30), a first class ride on the Orient Express that will take you from Bangkok to Singapore (October 25-28), a tour of Bangkok and Singapore (October 26-31), a twelve day visit to China (October 26-November 6) or a deluxe motorcoach tour of the bunga Raya — Singapore, Malaysia and Bangkok (October 26-November 5).

Culture, heritage and history

Ottawa boasts one of the finest collections of museums! Culture, heritage and history to delight all tastes are to be found in the 12 national museums in the Ottawa region. The CDA Convention has organized tours to some of these museums (consult your preliminary program) for participants of the convention, however, there are many more to be enjoyed for those who are able to stay a few extra days.

☆ Canadian Museum of Civilization

This museum offers vivid exhibitions of history and heritage; a lively Children's Museum; and Cinéplus (the world's only combined IMAX and OMNIMAX film theatre).

☆ Canadian Museum of Contemporary Photography

The Canadian Museum of Contemporary Photography collects and exhibits artistic and documentary photography by Canadians. There are changing exhibitions in the galleries, special programs in the theatre and photographic treasures in the boutique.

☆ Canadian Museum of Nature

Explore the fascinating world of nature and the challenges facing our environment. From gigantic dinosaurs to sparkling gems, the Canadian Museum of Nature offers stimulating exhibits for everyone. A special shop offers unusual gifts, books and much more.



☆ Canadian War Museum

The only national military museum in Canada. It contains art and artifacts from early Canadian conflicts to the Korean War. Come see a Sopwith Camel, a Victoria Cross or a First World War nurse's uniform.

☆ National Aviation Museum

The National Aviation Museum is one of the best of its kind in the world. Its collection of more than 100 aircrafts illustrates the evolution of the flying machine in peace and war, as well as the important role flight has played in Canada's development.

☆ National Gallery of Canada

Permanent displays include the world's largest collection of contemporary and historic Canadian art as well as American, European and Asian collections, prints, drawings and photographs, film and video collections. Special exhibitions on view year round.



CANADIAN DENTAL ASSOCIATION CONVENTION

Ottawa • August 26 - 29, 1995

GST Registration Number: R106845209

ONE FORM PER PERSON

PRE-REGISTRATION & HOTEL RESERVATION FORM • Please PRINT

1. Obtain 1 **FORM FOR EACH INDIVIDUAL** you would like to register. You may photocopy the enrolment form, or you can obtain additional forms by contacting CDA Conventions at 1-800-267-6354.
2. **EACH** individual's name should be printed clearly in the appropriate section. **EACH** individual form should select a **DELEGATE TYPE** in order to register for the Convention.

Check one: ☐ Dr. ☐ Mr. ☐ Ms.	Family Name First Name Sex: ☐ M ☐ F	
Street address		
City	Province	Postal Code
Office Telephone ()	Home Telephone ()	Fax ()
CDA Membership Number		License Number

LIMITED ATTENDANCE LECTURES

Saturday, August 26th —

Terry Donovan — Aesthetic/Restorative Dentistry — All-day lecture
Dentist \$ 135 _____
Dental Staff (non-dentist) \$ 65 _____

Sunday, August 27th —

W. Charles Blair — Achieving Financial Independence — Half-day lecture
Dentist (7% GST included) \$ 95 _____
Spouse (7% GST included) \$ 40 _____

W. Charles Blair — Dental Practice Transition — Half-day lecture
Dentist (7% GST included) \$ 95 _____
Spouse (7% GST included) \$ 40 _____

Donald Rolfs — Periodontal Disease — All-day lecture
Dentist \$ 135 _____
Dental Hygienist \$ 65 _____

Alan Boghosian — Dental Materials — All-day lecture
Dentist \$ 135 _____
Dental Staff (non-dentist) \$ 65 _____

HANDS-ON COURSES

Saturday, August 26th —

Alan A. Boghosian — Dental Materials — Half-day hands-on course
Dental Assistant (limited to 50 participants) \$ 95 _____

James Grisdale — Scaling & Root Planing — Half-day hands-on course
Dentist / Dental Hygienist (limited to 40 participants) \$ 115 _____

John Cox — Implants
1 1/2 DAY COURSE: SATURDAY AND SUNDAY (AM)
Dentist (limited to 50 participants) \$ 295 _____

Sunday, August 27th —

Stanley Malamed — Emergency Medicine in Dentistry — All-day hands-on course
Dentist/Staff (limited to 30 participants) \$ 295 _____

Jeffrey A. Sherman — Electrosurgery — Half-day hands-on course
Dentist (limited to 40 participants) \$ 115 _____

Monday, August 28th —

Donald Rolfs — Periodontal Surgery — All-day hands-on course
Dentist (limited to 40 participants) \$ 295 _____

St. John Ambulance — CPR — All-day hands-on Certification course \$ 35 _____

Tuesday, August 29th —

Salam Sakkal — Advanced Endodontics — All-day hands-on course
Dentist (limited to 40 participants) \$ 195 _____

GST is included in the Limited Attendance Practice Management courses. GST is not charged on Limited Attendance and Hands-on scientific courses. Lunch is included in all-day Limited Attendance and Hands-on courses (except for CPR).

CONVENTION

Choose only one delegate type. 1 registrant per form.

☐ **Dentist**
Member of CDA \$ Nil _____
Non-member of CDA (7% GST included) \$ 175 _____

☐ **Spouse** (7% GST included) \$ 98 _____

☐ **Dental Hygienist** (7% GST included) \$ 98 _____
Dental Hygienist (See note below)* \$ Nil _____

☐ **Dental Assistant** (7% GST included) \$ 98 _____
Dental Assistant (See note below)* \$ Nil _____

☐ **Office Personnel, Office Manager, Receptionist** (7% GST included) \$ 98 _____
Office Personnel, Office Manager, Receptionist (See note below)* \$ Nil _____

☐ **Dental Technician** (7% GST included) \$ 98 _____

☐ **Children (6-12 years)** Child's Age: _____
Monday program (7% GST included) \$ 48 _____
Tuesday program (7% GST included) \$ 48 _____

☐ **Student Dentist** \$ Nil _____
☐ **Student Hygienist** \$ Nil _____
☐ **Student Dental Assistant** \$ Nil _____

* Students must provide proof of full-time attendance.

***NOTE:** Every dentist enrolled for the Convention can register two (2) non-dentist staff members for the convention proper **FREE OF CHARGE**. The first or second non-dentist staff member to register *with* a dentist, choose "Registration Fees" Nil. Send Registration Form with that of the dentist.

SOCIAL EVENTS

- ☐ **Opening Ceremony** — Sunday, August 27th
(Subject to space availability — One ticket per Registration Form)
Will attend ☐ Yes ☐ No \$ Nil
- ☐ **Meet & Greet** — Sunday, August 27th
..... (7% GST included) \$ 50
- ☐ **President's Gala** — 50's Dance — Monday, August 28th
..... (7% GST included) \$ 75
- ☐ **Wine Tasting Reception** — Tuesday, August 29th
..... (7% GST included) \$ 25
- ☐ **Golf Day** — Sunday, August 27th
..... (7% GST included) \$ 98
- ☐ **Fun Run** — Tuesday, August 29th a.m.
..... (7% GST included) \$ 20
- ☐ **Visits and Tours**
Monday tour and luncheon (7% GST included) \$ 50
Tuesday tour and luncheon (7% GST included) \$ 50

TOTAL \$

Person/company
responsible for payment: _____

☐ I wish to pay the above total by credit card: ☐ MasterCard ☐ VISA

Card # _____ Expiry date _____

Name of Cardholder _____

SIGNATURE _____

☐ I enclose a cheque payable to the Canadian Dental Association.
Post-dated cheques will not be accepted.

CANCELLATION POLICY:

- Cancellation received, in writing, on or before July 21, 1995 — full refund
- Cancellation received, in writing, after July 21, 1995 — subject to a 25% administrative charge

NO REFUND AFTER AUGUST 18, 1995



INFORMATION ON REGISTRATION:

All participants registered for the Convention:

- have access to all general lectures of the Convention proper
- have access to the exhibit hall
- have access to the Opening Ceremony
- are entitled to register for the appropriate limited attendance lectures and hands-on courses
- are entitled to register for social events, visits and tours

Spouses and children have access to the Opening Ceremony only if they register for one or more of the Convention's day programs or if registered for the Convention. Spouses not registered for the Convention do not have access to the general lectures or to the exhibit hall.

To ensure that your requests are met — **please register early**. Advance registrations will be accepted until **July 21st, 1995** after which date forms will be returned to the sender. Each on-site registration will be subject to a \$30 administrative fee (GST included).

MAKING YOUR AIRLINE RESERVATIONS

Special arrangements have been made with Air Canada to offer participants discounts on airfares.

To take advantage of this service, you must call Air Canada Convention Central at 1-800-361-7585 and quote event CV950931.

HOTEL RESERVATION

Type of Room:

☐ Single ☐ Double ☐ Twin ☐ Other (please specify) _____

☐ Smoking ☐ Non-Smoking

Special Requests: _____

Sharing with _____

Indicate your choice of hotel* (by numbering the boxes):

☐ Westin Hotel (CDA Headquarters) \$128.00 single/double

☐ Château Laurier \$127.00 single/double

☐ Sheraton \$110.00 single/double

☐ Novotel \$99.00 single/double

* Prices do not include taxes.

Arrival Date: _____

Arrival Time: _____

Departure Date: _____

All changes and/or cancellations must be made **IN WRITING** through CDA Conventions. Fax to (613) 523-3062.

In order to reserve a room, a guarantee for the first night is essential. The guarantee will apply to the first night ONLY. To cancel your reservation advise CDA Conventions at least three (3) days prior to your projected arrival date.

CHEQUES WILL NOT BE ACCEPTED.

☐ MasterCard ☐ American Express ☐ VISA

Card # _____ Expiry date _____

Name of Cardholder _____

SIGNATURE _____

DEADLINE for Reservations: July 21, 1995

ACCOMMODATION

- ☐ I do not require accommodation
- ☐ Other arrangements have been made

MAIL Pre-registration and Hotel Reservation Form with payment to:

1995 CDA Convention
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

OR FAX

(if paid by credit card): (613) 523-3062

Dentists, Hygienists, Assistants, Office Personnel
& Technicians registering by July 21, 1995
will be eligible to win two tickets **anywhere**
Air Canada flies in Europe and North America!
(Some restrictions apply.)



OTTAWA 1995
August 26 - 29

HANDS-ON COURSES

one procedure



▶ is worth a thousand words

DENTAL MATERIALS FOR DENTAL ASSISTANTS

Alan A. Boghosian, D.D.S. • Chicago, IL
Saturday, August 26, half-day session

In this course, designed for Dental Assistants, Dr. Boghosian will discuss the properties of, and allow hands-on mixing and handling of traditional and more recent dental materials.

ROOT PLANING AND SCALING

James Grisdale, D.D.S. • Vancouver, BC
Saturday, August 26, half-day session

This hands-on course covers the in-depth use of ultrasonic instrumentation. The participant will be exposed to the theory and practice of ultrasonics and be given an opportunity to utilize the latest in piezo electric instrumentation on a typodont.

EMERGENCY MEDICINE IN DENTISTRY

Stanley F. Malamed, D.D.S. • Los Angeles, CA
Sunday, August 27, all-day session

In this program, Doctor Malamed will review the essentials of emergency management and will provide the participants with the opportunity to gain clinical skill in the management of various simulated "emergency situations".

IMPLANTS: Basic Prosthetic Certification Course

John Cox, D.D.S., Dip. Pros., MSc. • Ottawa, ON
Sunday, August 27, half-day session
(prerequisite lecture all day Saturday)

During this course, edentulous and partially edentulous procedures will be done. Actual implant components will be used on models to carry out prosthodontic procedures while slides will demonstrate the sequence as procedures are performed.

ELECTROSURGERY

Jeffrey A. Sherman, D.D.S. • Oakdale, NY
Sunday, August 27, half-day session

This course will offer discussion and demonstration of all electrosurgical cutting, coagulation and fulguration modes, on the latest electrosurgical/radiosurgical equipment.

CPR — Basic Rescuer Level 'C' Certification Course

St. John Ambulance
Monday, August 28, all-day session

The CPR level 'C' course has been designed to Canadian Heart Foundation standards. This five to six hour course is geared to health care professionals.

PERIODONTAL SURGERY FOR THE GENERAL PRACTITIONER

Donald Rolfs, D.D.S. • Union, WA
Monday, August 28, all-day session

This hands-on course for dentists will detail the two most common and powerful periodontal surgical procedures effected by the general practitioner: a Widman flap procedure and an open flap curettage procedure.

ADVANCED CONCEPTS IN ENDODONTICS

Salam Sakkal, D.M.D., M.S. • Montréal, QC
Tuesday, August 29, all-day session

This workshop will review many techniques that will help you improve your skills. You will prepare 45 degree curved canals; obturate in 3 D these canals using the modified lateral compaction and Sealextra root canal sealer; prepare a dowel space to receive an Endo-composipost University of Montréal.

LIMITED ATTENDANCE LECTURES



OTTAWA 1995
August 26 - 29

MANY ARE INTERESTED ...

... BUT FEW CAN BE CHOSEN!

Limited Attendance Lectures are limited to a set number of spaces in each lecture. To ensure that you obtain a seat in one of these sessions, send in your registration now.

UPDATE ON ESTHETIC RESTORATIVE DENTISTRY

Terry Donovan, D.D.S. • Los Angeles, CA

Saturday, August 26, all-day session

This presentation will delineate the procedures essential for success with conventional and contemporary adhesive restorative dentistry. An objective comparative evaluation of many of the newer products on the market will also be given with an emphasis placed on clinical manipulation of these products.

Topics to be covered include essentials for soft tissue esthetics in fixed prosthodontics; effective gingival displacement; new materials and techniques for fabrication of provisional restorations; review of impression materials; New techniques with impression materials; solutions for fractured porcelain; metal bonding; current thoughts on bonding to tooth structure; enamel bonding, dentin bonding; conservative esthetic techniques; bonded porcelain and essentials for success in fixed prosthodontics.

CONTEMPORARY DENTAL MATERIALS AND THEIR CLINICAL APPLICATION

Alan A. Boghosian, D.D.S. • Chicago, IL

Sunday, August 27, all-day session

The fast evolving world of dental materials and the rapid development of new techniques allow today's practitioner to restore compromised dentition with unparalleled efficiency, either functionally or aesthetically. This session will review dental materials and techniques with an emphasis on prosthodontics and adhesive material applications.

The first portion of the course will review elastomeric impression materials, concepts of tooth preparation, temporization and tray selection. In addition, a variety of impression techniques will be presented.

Then, techniques for implant impressions, new ceramo-metal systems and cementation will be presented. Dr. Boghosian will discuss adhesive materials and their application in the restoration of Class V lesions. This discussion will be based on the results of clinical research conducted at Northwestern University.

PERIODONTAL DISEASE:

What it is and what we can do about it

Donald Rolfs, D.D.S. • Union, WA

Sunday, August 27, all-day session

This is a down-to-earth, fun, interactive day filled with mind-bending paradigm shifts that bring most perio therapy into the realm of the general dentist.

Similarities and differences between dental and periodontal therapy will be explored, illustrated, and explained. Some of the thought process which works so well and is so successful for restoring teeth does not transfer to perio. A step-by-step guide for "thinking periodontally" will be provided.

How to attain 100% compliance with your perio patients will be explored. If patient compliance with oral hygiene instruction is a source of frustration in your office, this interactive learning experience will put new joy into your perio program.

ACHIEVING FINANCIAL INDEPENDENCE

W. Charles Blair, D.D.S. • Charlotte, NC

Sunday, August 27, half-day session

This hard-hitting program designed for dentists and their spouses contains "inside information" that you simply can't find elsewhere — gleaned from years of experience working exclusively with the dental profession. You'll learn how to plan investments, develop a personalized retirement plan, improve practice profitability, save thousands in unnecessary insurance costs and discover tax-free income secrets.

DENTAL PRACTICE TRANSITIONS

W. Charles Blair, D.D.S. • Charlotte, NC

Sunday, August 27, half-day session

This course is designed for dentists and their spouses who are considering entering into an associateship or partnership relationship or the purchase or sale of a professional practice within five years. The session is designed to improve the planning process and to control the impact these transactions will have on their professional, financial, and personal lives.

The course is presented in a fast-moving, non-technical manner. It is not recommended for dental staff personnel.

THE KEY TO WISDOM



OTTAWA 1995

August 26 - 29

GENERAL SCIENTIFIC LECTURES

MARION BALLA, M.Ed., M.S.W.

Ottawa, ON

"Effective Communication with Staff and Clients in the Dental Environment"

"Problem Solving Techniques for the Dental Environment"

W. CHARLES BLAIR, D.D.S.

Charlotte, NC

"Overhead Control That Makes Cents"

PIERRE BOUDRIAS, D.M.D., M.S.D.

Montreal, QC

"Post and Core: An Update"

SEBASTIAN G. CIANCIO, D.D.S., Dip. Perio.

Buffalo, NY

"Dentotherapeutics"

"Perio-Chemotherapeutics"

MICHEL COUTURE, D.M.D., Dip. Perio.

Montreal, QC

"The PSR Programme: Is your Practice Up to Date in Periodontics?"

HAROLD L. CROSSLEY, D.D.S., Ph.D.

Baltimore, Rhode Island

"Pharmacological Update for the Dental Practitioner"

SHIMON FRIEDMAN, D.M.D.

Toronto, ON

"Biological Considerations of Endodontic Innovative Techniques"

"Replantation of Teeth — The Endodontic Perspective"

HELEN GRAD, M.Sc., Phm.

Toronto, ON

Controversies Surrounding Temporomandibular Disorder (TMD) II

GRIEVE MEMORIAL LECTURE

MIRIAM GRUSHKA, M.Sc., D.D.S., Ph.D.

Toronto, ON

Controversies Surrounding Temporomandibular Disorder (TMD) I

WAYNE HALSTROM, D.D.S.

Vancouver, BC

"Update on Snoring and Sleep Apnea"

ROBERT HENRY, D.D.S., M.S.

San Antonio, TX

"Pulp Therapy in Periatric Dentistry"

"Pediatric Dentistry: General Overview"

ANITA JUPP

Burlington, ON

"Teamwork and Success Go Hand in Hand"

"Sharing a Common Vision for Changes in Dentistry"

JOHN KANCA, D.M.D.

Middleburg, CT

"State-of-the-Art Adhesive Dentistry"

JOHN KHADEMI, D.D.S., M.S.

Los Angeles, CA

"What's New in Endodontics?"

SAM KUCEY, D.D.S., F.R.C.D.C., Dip. ABOMS

Ottawa, ON

"Osseointegration Then and Now: A 10 Year Retrospective Reviewing the Impact of Osseointegration in the Practice of Dentistry"

MYER S. LEONARD, M.D., D.D.S.

Minneapolis, MN

"Ups and Downs, Joys and Grievs of Office Oral Surgery"

"All The Medicine You Wanted To Know

Without Going To Medical School"

STANLEY MALAMED, D.D.S.

Los Angeles, CA

"Trouble-Shooting the Mandibular Block"

MURRAY McDONALD LECTURE

Jane Fulton, Ph.D.

Ottawa, ON

"Bordering on the Possible:

Health Care Lessons from the Global Village"

JOHN MCDUGALL, M.D.

Santa Rosa, CA

"Nutrition in the Cause and Prevention of Common Diseases"

JACK PRESTON, D.D.S. &

JOHN KHADEMI, D.D.S.

Los Angeles, CA

"Computers in Dentistry"

ROBERT SCHALLHORN, D.D.S., M.S.

Aurora, CO

"Current Concepts in the Management of Adult Periodontitis"

"Predictable Periodontal Regeneration is a Reality"

CLYDE SCHULTZ, D.D.S.

San Francisco, CA

"Recession Proof Your Practice: Strategies for Minimizing the Effects of Economic Downturn"

"Team Communication Strategies:

Building a Productive and Secure Practice"

MARK SPATZNER, D.M.D., Dip. Perio.

Westmount, QC

"Regenerative Periodontal Therapy:

The Clinician's Viewpoint"

"Regenerative Periodontal Therapy:

What the Staff Wants to Know"

KNOWLEDGE IS THE KEY TO WISDOM

KNOWLEDGE IS THE KEY TO WISDOM

KNOWLEDGE IS THE KEY TO WISDOM

Recommendations for Infection Control Procedures

Dentists have always been concerned with the prevention of disease transmission. Traditionally, this has been accomplished by the sterilization of surgical instruments. The appreciation that dentists are at risk for acquiring hepatitis B has resulted in the realization that disease may not only be transmitted from patient to patient, but also from dentist to patient and patient to dentist. This has created the philosophy that all blood, saliva and other body fluids must be considered as potentially infectious. Such an understanding has necessitated a revision of previous infection control procedures.

The implementation of such changes will occur if the dental profession is aware of how practical infection control may be achieved. As the initial phase of this educational program, infection control procedures have been developed.

Since medical history and examination cannot reliably identify all patients infected with HIV, HBV or other blood-borne pathogens, precautions should be consistently used for all patients.

- gloves should be worn in treating all patients when contact with blood, saliva and body fluid is anticipated;
- hands should be washed with a germicidal soap prior to and immediately after the use of gloves;
- masks should be worn to protect oral and nasal mucosa from splatter of blood and saliva;
- eyes should be protected with some type of covering to protect from splatter of blood and saliva;
- rubber dam should be used in restorative dentistry wherever possible;
- heat sterilizers should be biologically monitored as to their effectiveness at least on a monthly basis, and a log of this monitoring maintained;
- up-to-date immunization status must be maintained for dentists and staff with patient-related du-

ties. This includes hepatitis B, measles, mumps, rubella, and influenza;

- appropriate sterilization methods should be used on all dental instruments;
- handpieces and similar intraoral devices should be sterilized according to the manufacturer's directions; if not sterilizable, they must receive appropriate high level disinfection;
- counter tops, working surfaces and operatory furniture, especially if aerosols and/or blood splatter will be generated, should be protected by disposable covers and/or disinfected by a suitable liquid;
- utilization of disposable materials is encouraged. Disposable materials should be discarded in

plastic bags. Sharp items, such as needles and scalpel blades, should be placed in puncture-resistant containers prior to disposal;

- a high temperature wash cycle, with normal bleach concentration, followed by machine drying is recommended for clothing. Dry cleaning and steam pressing is also appropriate;
- an office infection control manual should clearly describe protocols and procedures; each office should appoint an infection control officer, and a log of needlestick/percutaneous injuries to staff should be established.

*Approved:
Canadian Dental Association
Board of Governors, 1992*

ATTENTION ALL DENTISTS

Crown and Bridge Seminar Now Being Featured On The Bridge Of The Regal Princess

*Kennedy Professional Educational Seminars
Presents*

PREDICTABLE EXCELLENCE IN PROSTHETIC AND RESTORATIVE DENTISTRY

SEMINAR at SEA
Regal Princess



January 27 - February 3, 1996

SOUTHERN CARIBBEAN CRUISE

Ports of call: San Juan, Barbados, Mayreau, Martinique,
St. Maarten, St. Thomas.

Air program available from 15 Canadian gateways.

Watch for our detailed brochure in the August CDA issue.

For further information contact:

Wendy Samborski or
Kathy Loewen at
Carlson - Wagonlit Travel
(800) 715-8747 or (204) 944-9900
Fax (204) 946-5025

Carlson
Wagonlit
Travel™

JOURNAL

June/
Juin
1995
Vol. 61
No. 6

GUARANTEED TO PREVENT DECAY IN DENTISTS.



No one wants to see their hard earned profits being eaten away by all the costs involved with running, or starting up, a practice. We've got a plan to help prevent financial decay. It's called the Scotia Professional Plan™, and you'll

find it right next door at Scotiabank. It's a unique plan we've designed specifically to save dentists time and money. You'll receive higher loan limits at lower interest rates. Interest on current accounts at Money Market rates.



Pre-approved overdraft protection. A ScotiaGold® VISA® card with no annual fee.

A specially trained Scotiabank manager will customize the Plan for you. Whether that means 100% financing for your business or personal needs† Or meeting your longer term investment goals. We'd like to meet with you to tell you more.

Just contact your local Scotiabank branch for a free financial check-up.

SCOTIA PROFESSIONAL PLAN...NOW AVAILABLE ON CDAnetplus



INFECTION CONTROL



Contaminated Toothbrushes and Their Disinfection

S.D. Caudry, B.Sc., PhD, DDS

A. Klitorinos, B.Sc., M.Sc.

E.C.S. Chan, BA, MS, PhD

ABSTRACT

Twenty toothbrushes used by healthy subjects were screened for the presence of microorganisms. Microbes were dislodged from the brushes by vortexing, and an average of 4×10^3 CFU/mL were recovered from the suspending fluid. Bristles removed from the vortexed brushes still yielded confluent bacterial growth on brain-heart infusion agar medium. Virkon (one per cent), Listerine, Cepacol, Scope, and Plax were tested for their bactericidal effects on microorganisms sedimented from the suspending fluid, on toothbrush bristles and proxabruses, and on various test species including *Candida albicans*, *Mycobacterium smegmatis*, *M. bovis*, and *Streptococcus mitis*. Virkon and Listerine killed all the test species and virtually all the microorganisms on the toothbrush bristles and proxabruses. Six volunteers tested the efficacy of a Listerine soaking regime to prevent the bacterial contamination of toothbrushes. Soaking the toothbrush head (bristles) in Listerine for 20 minutes after brushing was sufficient to eliminate bacterial contamination.

SOMMAIRE

On a examiné vingt brosses à dents utilisées par des sujets sains pour y détecter la présence de microorganismes. On y a délogé les

microbes par tourbillonnement et on a recouvré des fluides en suspens une moyenne de 4×10^3 UFC/mL. Les poils retirés des brosses tourbillonnées ont encore produit une pousse bactérienne de croissance confluyente sur milieu solide BHI. On a éprouvé les pouvoirs bactéricides des produits Virkon (un pour cent), Listerine, Cepacol, Scope et Plax sur les microorganismes en dépôt dans les fluides en suspens sur les brosses à dents, les poils et les proxabrosses ainsi que sur diverses espèces-test dont le *Candida albicans*, le *Mycobacterium smegmatis*, le *M. bovis* et le *Streptococcus mitis*. Le Virkon et la Listerine ont tué toutes les espèces-test et presque tous les microorganismes sur les brosses à dents, les poils et les proxabrosses. Six volontaires ont éprouvé l'efficacité d'un trempage dans la Listerine en vue de prévenir la contamination des brosses à dents par des bactéries. Le trempage de la tête (les poils) des brosses à dents dans la Listerine pendant 20 minutes a suffi pour éliminer les risques de contamination par des bactéries.

Introduction

The concept that toothbrushes were contaminated after use was proposed as early as 1920 by Cobb,¹ who implicated the toothbrush as a cause of repeated infections of the mouth. It was not until 1978, however, that Svanberg²

implicated heavy contamination of the toothbrush by *Streptococcus mutans* after use.

Bacteremias as a consequence of daily brushing are well-documented in the literature,³ and bacteremias by oral bacteria are recognized as a cause of endocarditis by the dental and medical profession. In fact, with respect to the prevention of endocarditis, some authors now hold that it is more important to reduce the daily bacteremias resulting from brushing than it is to implement antibiotic prophylaxis prior to specific invasive dental procedures.⁴

Glass and Lare⁵ reported that contaminated toothbrushes may play a role in systemic or localized diseases. A subsequent report by Glass and Jensen⁶ indicated that both viruses and bacteria could be harbored on and transmitted by contaminated toothbrushes.⁶ On the basis of clinical and laboratory observations, including a beagle dog model, Glass et al⁷ demonstrated a link between oral inflammatory diseases and self-contaminated toothbrushes.

Following their studies, these authors recommended the regular changing of toothbrushes and toothpaste, the storage of brushes in a non-humid environment, and the redesign of toothbrushes to limit the retention of microorganisms.

The main purpose of our study was to demonstrate, quantitatively, the presence of microorgan-

JOURNAL

June/
Juin
1995
Vol. 61
No. 6

Table 1

Percentage Kill Of Dislodged Microorganisms From Used Toothbrushes By Various Anti-Infective Agents After 20-Minute Exposure

Toothbrush No.	Plax	Scope	Cepacol	Listerine	Virkon
1	99.9	100.0	100.0	100.0	100.0
2	NT	NT	NT	NT	NT
3	100.0	100.0	100.0	100.0	100.0
4	100.0	100.0	100.0	100.0	100.0
5	80.0	100.0	100.0	100.0	100.0
6	0.0	100.0	100.0	100.0	100.0
7	31.0	100.0	100.0	100.0	100.0
8	99.9	100.0	100.0	100.0	100.0
9	87.5	100.0	100.0	100.0	100.0
10	0.0	100.0	100.0	100.0	100.0
11	45.4	100.0	100.0	100.0	100.0
12	0.0	100.0	100.0	100.0	100.0
13	0.0	100.0	100.0	100.0	100.0
14	93.3	100.0	100.0	100.0	100.0
15	96.2	100.0	100.0	100.0	100.0
16	100.0	100.0	100.0	100.0	100.0
17	0.0	83.3	100.0	100.0	100.0
18	0.0	100.0	100.0	100.0	100.0
19	0.0	100.0	100.0	100.0	100.0
20	93.3	100.0	100.0	100.0	100.0

NT = Not tested since no microorganisms were dislodged from the toothbrush.

isms adherent to toothbrush bristles, as well as the presence of organisms that may act as potential aerosols because of their weak binding to the bristles. A second purpose was to evaluate the killing effect of various anti-infective agents, such as mouthrinses, on the microorganisms originating from toothbrushes. The authors also decided to test the efficacy of a Listerine-soaking regime intended to prevent the bacterial contamination of toothbrushes. On the basis of these findings, a practical and cost-effective procedure to disinfect toothbrushes is proposed.

Materials and Methods

Twenty used, brand-name toothbrushes were collected. These brushes had all been used at least once a day and some as often as four times a day. The mean time since initial use was about 12 months. All toothbrushes were analyzed in the laboratory within four hours of last use. Each brush handle was wiped with an alcohol swab before the brush head was

placed in a sterile centrifuge tube containing 12 mL of sterile saline (physiological). The tubes were then vortexed for five minutes and the toothbrushes removed. A 1.0 mL suspension of dislodged toothbrush debris was placed in each of 12 Eppendorf vials. The Eppendorfs were centrifuged and the pelleted debris in each vial was re-suspended in 10 µL of saline. One millilitre of saline was added to each of the two Eppendorfs that served as viable controls.

Similarly, the pelleted debris (containing microorganisms) in each of the remaining vials was challenged (in duplicate) with 1.0 mL of each of the following anti-infective agents: one per cent Virkon, a per-oxygen disinfectant (Pharma Science, Montreal, Que.), and the following mouthrinses — Listerine (Warner-Lambert, Scarborough, Ont.), Cepacol (Merrell Dow, Richmond Hill, Ont.), Scope (Procter & Gamble, Toronto, Ont.), and Plax (Pfizer, Kirkland, Que.). On addition of test solution, the Eppendorfs were vortexed and then incubated at room temperature for 20 minutes.

After incubation, the Eppendorfs were centrifuged at 4°C at 12,500 x g, and the pelleted debris was washed twice with 1.0 mL of saline and finally re-suspended in 100 µL of saline. The samples were serially diluted 10-fold, and 25 µL volumes of each dilution were plated on duplicate sets of brain-heart-infusion (BHI) agar medium (Difco, MI). They were then incubated aerobically at 35°C.

The bristles of each of the 20 used toothbrushes (that had been vortexed, as described above) were cut off at the base using a sterile scalpel. Approximately equal numbers of bristles (ca. 50) were aseptically placed in each of 12 Eppendorfs. All the vials were challenged with a disinfectant and mouthrinses in the same manner as described above for the sedimented debris. After washing in saline, the bristles were placed individually on BHI agar plates, using sterile forceps, and incubated at 35°C for three days.

The killing effect of these anti-infective agents was also tested with pure cultures of microorgan-

Table II

Bacterial Growth On Toothbrush Bristles Following 20-Minute Exposure To Various Anti-Infective Agents

Toothbrush No.	Saline	Plax	Scope	Cepacol	Listerine	Virkon
1	++++	—	—	—	—	—
2	++++	—	—	—	—	—
3	++++	—	—	—	—	—
4	++++	—	—	—	—	—
5	++++	+	—	—	—	—
6	+	+	—	—	—	—
7	+	—	—	—	—	—
8	++++	++++	++++	++++	—	—
9	++++	++++	++++	++++	+	++++
10	+	+	+	+	—	—
11	++++	—	—	—	—	—
12	++++	—	—	—	—	—
13	+	+	+	+	+	—
14	++++	++++	—	—	—	—
15	++++	++++	—	—	—	—
16	++++	—	—	—	—	—
17	+	—	—	—	—	—
18	+	—	—	—	—	—
19	+	—	—	—	—	—
20	+	++++	—	—	—	—

++++ confluent growth on all bristles

++ growth on 1/2 of the bristles

+ growth on 1/4 of the bristles

— no growth detected

isms. Cultures of *Candida albicans*, *Streptococcus mitis*, *Mycobacterium smegmatis*, *M. bovis* and *Bacillus subtilis* were obtained from the stock culture collection of the department of microbiology and immunology at McGill University. Logarithmic growth-phase cells of *C. albicans* (in Sabouraud's dextrose medium), *S. mitis* (in BHI medium), *M. smegmatis* (in nutrient broth-glycerol), and *M. bovis* (in Middlebrook 7H10 medium, Difco) were prepared. *B. subtilis* was incubated at room temperature on nutrient agar slopes until the majority of cells had sporulated (verified by spore stain). A 1.5 mL suspension of each of the test organisms (ca. 10^8 cells or spores/mL) was placed into Eppendorfs (in duplicate). The suspensions were pelleted and challenged with anti-infective agents. Immediately on the addition of the anti-infective solution, the Eppendorfs were vortexed and 50 μ L were removed and placed in 1.5

mL of saline. This represented the 30-second exposure sample.

Additional 50 μ L samples were removed at one, three, five, 10 and 20 minutes (the exposure time for *B. subtilis* was extended to 40 minutes), and each sample placed into 1.5 mL of saline. The samples were then sedimented and re-suspended in 100 μ L of saline. All exposed samples were subsequently serially diluted. Aliquots were then plated on the appropriate medium and incubated for three days at 35°C. At the completion of the exposure periods, all of the remaining challenged cells were sedimented, washed twice in saline, and re-suspended in 5.0 mL of the appropriate broth to detect the viability of any remaining exposed cells.

The effect of various anti-infective agents on proxabrushes (612-extra fine cylindrical brush, Butler, Chicago, Ill.) was also tested. Ten sterile proxabrushes were dipped in 10^8 - 10^9 cells or spores/mL of each culture of *C. albicans*, *M.*

bovis, *M. smegmatis*, *S. mitis*, or *B. subtilis*, and the brushes were incubated in empty sterile Petri dishes for three days at 35°C. (This permitted adherent growth of the microbes on the bristles.) Two proxabrushes were each completely submerged in an Eppendorf containing 1.25 mL of saline and served as viable controls. The remaining proxabrushes for each series (i.e., one series of 10 brushes per each microbial species) were challenged with Virkon or Listerine for five, 10, 20, 40, 80 and 160 minutes. After exposure, the brushes were removed, rinsed in sterile water, placed in 5.0 mL growth medium, and incubated at 35°C for at least one week. Gram stains of the medium were then performed to verify the presence (growth) of the tested culture.

To evaluate Listerine as a toothbrush disinfectant in a home setting, six volunteers were given a new toothbrush and instructed to submerge its head in a screw-top jar containing Listerine for 20 min-

ExperDent

ALBERTA

BELTLINE DOWNTOWN CALGARY –

Owner retiring but willing to stay on as associate for smooth transition. 5 ops, Pan, hygiene dept, solid established practice billing approx \$400,000. Provides a solid net income. TAI018

BEDROOM COMMUNITY OF CALGARY

– General family practice, modern facility, 3 ops equipped and 1 plumbed, Pan, computerized, 45-50 new patients per month. Owner prepared to assist with transition. TAI023

DOWNTOWN CALGARY – Newer facility and equipment. 2 ops with provisions for 4, Pan, state-of-the-art computer system, good exposure. Billing \$400,00 and continuing strong growth. Owner leaving province. TAI019

EAST CENTRAL ALBERTA – Thriving, growing practice located in rural community. Recently renovated facility. 3 ops, Pan, computerized, 1,500 active patients with 30-40 new patients per month. Gross billings approx \$500,000. TAI020

SOUTH-EAST CALGARY – Practice located in the heart of a growing residential community. Ideal opportunity for 1 or 2 progressive, eager young dentists. Low operating expenses, good exposure, excellent growth potential. TAI022

WEST CENTRAL ALBERTA – Modern office located approx 1-1/4 hrs from Edmonton. 3 treatment ops, 2 hygiene ops, Pan, computerized, excellent net income with \$500,000 guaranteed gross billings. Owner retiring. TAI024

Please call for additional information regarding these opportunities and our practice valuation and transition services:

ExperDent

Tyson & Associates Inc. – Broker

Contact: Dan Tyson

10524 Waneta Crescent SE,

Calgary AB T2J 1J6

Tel: (403) 680-4408

BRITISH COLUMBIA

CENTRAL FRASER VALLEY – Established family practice in high growth area. 8 ops. Potential for growth. Gross over \$400,00. **SOLD**

CHILLIWACK – Established general practice in large 1,800 sq. ft. facility. Strata unit optional. 5 ops, consult room. High exposure, gross over \$600,000. **SOLD**

COQUITLAM – Established family practice with storefront exposure located in a busy plaza. 2 ops and 2 plumbed. Good growth potential.

KAMLOOPS – Satellite or starter practice. 2 ops, low expenses. Price: \$45,000

LANGLEY – Retail location with lots of traffic. 2 ops fully equipped plus 2 plumbed. Over 1,200 active charts, high gross.

NEW WESTMINSTER – Established family practice located in busy medical/dental bldg. Price \$75,000 (assets).

SMITHERS – Established 20 yrs. 2 ops recently re-equipped and renovated. Great outdoor lifestyle. Gross \$240,000 with easy growth potential.

VANCOUVER – General family practice established 15 yrs. High traffic mall location. Extend hours and increase income.

VANCOUVER – Well established paediatric practice. Unique office design in great location. Buy all or part or this high grossing practice.

VANCOUVER ISLAND – Orthodontic opportunity. Purchase all or part of a large practice.

WEST KOOTENAYS – Storefront location. 3 ops with room to expand. Envable lifestyle. Flexible transition. Price: \$175,000.

Please call for additional information regarding these opportunities and our practice valuation and transition services:

ExperDent

Al Heaps & Associates Inc. – Broker

Contact: Al Heaps (Cellular (604) 644-6297)

80 – 10551 Shellbridge Way,

Richmond BC V6X 2W9

Tel: (604) 278-5059 Fax: (604) 278-1406

Our Services

- ☒ Practice Brokerage
- ☒ Practice Valuations
- ☒ Structuring Transitions and practice sales to maximize returns
- ☒ Building your practice through profitable associateships and partnership arrangements
- ☒ Facilitating Agreements
- ☒ Partnership Renegotiations
- ☒ Practice Mergers
- ☒ Associate selection and integration
- ☒ Marketing Services for patient retention and new patient flow
- ☒ Practice Management for collections, team building and case acceptance
- ☒ Automation/Technology
- ☒ Retirement Planning

Please call for additional information regarding our practice valuation, management, marketing and transition services:

ExperDent Professional Services Inc. – Ontario

Contact: Russell Knight,
B.B.A. – Broker

705 – 7030 Woodbine Avenue,
Markham ON L3R 6G2

Tel: (905) 415-9767

Fax: (905) 475-4082

TM
ExperDent



We Welcome New Listings!

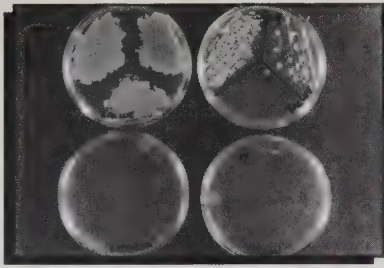


Fig. 1: Top row — BHI agar plates show serial dilution (10^0 to 10^{-5}) of a suspension of contaminating bacteria vortexed off toothbrush bristles and streaked on the medium surface. Bottom row — BHI agar plates show sterile surfaces after streaking of neat (10^0 dilution) samples of the same suspension following 20-minute exposure to Listerine or Virkon.

utes before first-time use and after every subsequent use. After soaking, the toothbrushes were stored vertically, with the bristles exposed to air. The Listerine in the jars was replaced with a fresh supply every three days. After three months of use, the bristles were removed from the brushes (which had been standing at room temperature for at least four hours) and placed on BHI agar medium to detect viable bacteria.

Results

Occurrence Of Bacteria On Toothbrushes and the Effect Of Anti-Infective Agents On the Microbiota

The number of colony-forming units (CFU) recovered on BHI medium from the dislodged debris suspension of each toothbrush was found to range from zero to 2.4×10^8 CFU/mL, with a mean of 4×10^3 CFU/mL. Only one toothbrush (labelled no. 2) had no dislodged bacteria. As shown in **Table I**, with Cepacol, Listerine, and Virkon, 100 per cent of all dislodged bacteria were killed after a 20-minute exposure; with Scope, only 83 per cent of the bacteria in the suspension from toothbrush no. 17 were killed. Plax, however exhibited a decreased killing effect. **Fig. 1** shows the serial dilution of a sample of dislodged bacteria from a used toothbrush and the effect of Listerine and Virkon on the undiluted sample.

Bristles cut off from the already vortexed toothbrushes were also

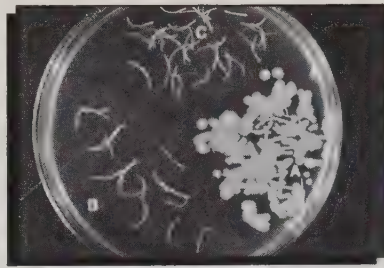


Fig. 2: Bacterially-contaminated bristles from used toothbrush. (A) untreated bristles; (B) bristles treated with Listerine for 20 minutes; (C) bristles treated with Virkon for 20 minutes.

exposed to anti-infective agents for 20 minutes. As shown in **Table II**, all bristles from these toothbrushes (including toothbrush no. 2) were found to be contaminated with adherent bacteria when they were placed on nutrient medium. All the anti-infective agents reduced the load of adherent microbes to varying degrees, with Listerine exhibiting the most potent activity (**Table II**). The anti-bacterial effect of Listerine and Virkon on the cut bristles of a vortexed toothbrush is shown in **Fig. 2**.

Effect Of Anti-Infective Agents On Selected Species Of Microorganisms

Candida albicans and *S. mitis* cells were killed by Listerine and Virkon on a 30-second exposure. *Mycobacterium smegmatis* cells were similarly killed by Listerine and Virkon, but only after a five-minute exposure. Cells and endospores of *B. subtilis* were reduced but not completely eliminated by exposure to Listerine for 40 minutes, whereas Virkon killed the same *B. subtilis* suspension within a 30-minute exposure period. To verify that every last cell had been killed, the test solutions containing re-suspended bacterial culture were centrifuged to remove the test solutions, and the pellet was re-suspended in the appropriate growth medium. With the exception of *B. subtilis*, all other cells had been killed by the test solutions after the exposure times examined.

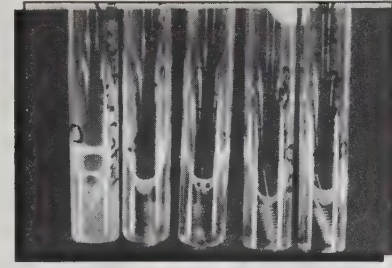


Fig. 3: The killing effect of Listerine on *Candida albicans* adhering to proxabrushes after various time exposures (l to r: zero, five, 10, 20, 40 minutes). As shown, slight growth occurred in Sabouraud dextrose broth after a five-minute treatment, but no growth was apparent in the incubated medium after treatments of 10, 20 and 40 minutes.

Effect Of Anti-Infective Agents On Selected Microorganisms Adherent To Proxabrashes

Candida albicans, *M. bovis*, *M. smegmatis*, *S. mitis* and *B. subtilis* that were adherent and multiplying on proxabrashes were killed within a 20-minute exposure to Listerine or Virkon. **Fig. 3** illustrates the killing effect of Listerine on *C. albicans*. However, with the sporulating bacterium *B. subtilis*, Virkon allowed no growth after a 80-minute exposure, but Listerine did not kill the endospores even after 160-minute exposure.

Application Of Listerine As an Anti-Contamination Agent In a Home Setting

Six volunteers, who had previously showed contaminated toothbrushes (nos. 6, 7, 13, 14, 18 and 20 in **Tables I** and **II**), were given new brushes to use, and told to disinfect them with Listerine after each use. Bristles removed from these toothbrushes were found to be free of cultivable bacteria on BHI medium.

Discussion

Collectively, Canada has a population of 27-million people, who buy 25 million toothbrushes each year, or an average of 0.9 toothbrushes per year for each Canadian. This is slightly higher than the U.S. average of 0.7 toothbrushes per year for every American. In spite of the millions of toothbrushes sold each year in North America, however, there is



little public awareness that their bristles may become contaminated by microorganisms with use. These microbes, which come from the millions that inhabit the human oral cavity, and may have pathogenic potential, are able to grow on the minuscule food particles that remain trapped within the bristles of the toothbrush after use. Furthermore, many families store their toothbrushes in a common container in a moist, humid bathroom, which may facilitate bacterial growth and cross-contamination. In effect, when an individual brushes his or her teeth with a used toothbrush, he or she puts toothbrush bristles teeming with microorganisms into the mouth.

Most consumers buy less than one toothbrush every 12 months and, despite the recommendations made by the dental profession, they are reluctant to replace it on a more frequent basis. In fact, most patients undergoing dental treatment do not change their toothbrush immediately following their appointment, even when they're given a new brush by the dental professional.

The results of this study show that toothbrushes, in normal use, are heavily contaminated by microorganisms. This finding is based on microbiological counts of the bacteria dislodged by vortexing, as well as of the confluent bacterial growth covering most of the bristles (**Tables I and II; Figs. 1 and 2**). It was demonstrated that, even after dislodgement by prolonged vortexing, the bristles still showed an abundant growth of bacteria. This observation suggests that much of the bacterial growth present on used toothbrushes is extremely adherent to the bristles, and that it is difficult to break the binding between these cells and their substrate. It is also possible that contaminated bristles play an instrumental role in the transmission and inoculation of contaminating microorganisms through abrasions of the gingiva, as well as through existing lesions. Silver et al.³ demonstrated this convincingly when they tested 36 subjects after toothbrushing, and found that three of them exhibited detectable bacteremias. This is of particular concern for Canada's increasing

populations of elderly and immuno- or medically-compromised patients, since oral microorganisms constitute an important cause of opportunistic and nosocomial infections. For example, it is well recognized that Gram-positive cocci of the oral microbiota are a cause of endocarditis resulting from transient bacteremia.⁸

All the anti-infective agents tested in this study manifested varying degrees of effectiveness in killing the bacteria present on the used toothbrushes (**Tables I and II**). Of these, Listerine and Virkon were considered to demonstrate the most superior antimicrobial activity.

The experiment with contaminated proxabrushes was conducted to ascertain whether all bacteria growing on the bristles (when still anchored to a base) would be killed following exposure to an anti-infective agent. If the whole contaminated proxabrush was submerged in a nutrient solution following disinfection, and no bacterial growth appeared after incubation, it could be concluded that every single cell was rendered non-viable by exposure to the anti-infective agent. The data obtained, as well as **Fig. 3**, show clearly that exposure to anti-infective agents for a sufficient length of time resulted in the complete killing of all microbes tested that were growing on the proxabrushes.

These findings suggest that the bacterial load commonly found on toothbrushes can be eliminated by submerging them in a solution such as Listerine for 20 minutes following each use. This assumption was tested in a home setting with six volunteers. The toothbrushes, after three months of use, were examined in the laboratory to ascertain if there were viable microorganisms adhering to the bristles. There were none.

Soaking toothbrushes in an appropriate anti-infective solution such as Listerine would therefore appear to be a practical and cost-effective procedure to eliminate the contaminating microorganisms on toothbrushes and other oral hygiene aids commonly used in the home setting. This procedure effectively frees used toothbrushes of microbial growth. Other, physical methods of killing the contaminating organisms

on the bristle tufts, such as ultra-violet radiation and various forms of heating (steam, boiling water, microwave exposure), may not be 100 per cent effective, and may damage the toothbrush.⁶ Soaking in an anti-infective agent would be more effective if it was preceded by a strong agitation (vortexing in our experiments) to dislodge weakly adhering bacteria and any trapped food particles. In this way, the initial microbial load would be lowered.

This simple, cost-effective procedure can enhance infection control in the home environment, and contribute to an overall disease prevention program. ■

Dr. Caudry and Ms. Klitorinos are research assistants in the department of oral biology, faculty of dentistry, McGill University, Montreal, Que.

Dr. Chan is professor and associate dean (graduate studies and research), department of microbiology and immunology, faculty of medicine and department of oral biology, faculty of dentistry, McGill University.

Reprint requests to: Dr. E.C.S. Chan, Department of Microbiology and Immunology, McGill University, 3775 University St., Montreal, Que. H3A 2B4.

References

1. Cobb, C.M. Toothbrushes as a cause of repeated infections of the mouth. *Boston Med Surg J* 183:263-264, 1920.
2. Svanberg, M. Contamination of toothpaste and toothbrush by *Streptococcus mutans*. *Scand J Dent Res* 86:412-414, 1978.
3. Silver, J.G., Martin, A.W. and McBride, B.C. Experimental transient bacteremias in human subjects with clinically healthy gingiva. *J Clin Periodontol* 6:33-36, 1979.
4. Kaye, D. Prophylaxis for infective endocarditis: an update. *Ann Int Med* 104:419-423, 1986.
5. Glass, R.T. and Lare, M.M. Toothbrush contamination: a potential health risk? *Quintessence Int* 17:39-42, 1986.
6. Glass, R.T. and Jensen, H.G. More on the contaminated toothbrush: the viral story. *Quintessence Int* 19:713-716, 1988.
7. Glass, R.T., Martin, M.E. and Peters, L.J. Transmission of disease in dogs by toothbrushing. *Quintessence Int* 20:819-824, 1989.
8. Dajani, A.S., Bisno, A.L., Chung, K.J. et al. Prevention of bacterial endocarditis. Recommendations by the American Heart Association. *JAMA* 264:2919-2922, 1990.

Relax!

As a kid, when I went to the dentist, every "buzz" and "clink" and "grind" made me anxious. But once my dentist explained what the instruments did, I could sit back and relax, knowing everything would be OK.

Now that I'm a dentist myself, I've felt that same anxiety trying to sort out what all this new technology and automation means to my practice. And just like my former

dentist, **CDAnetplus** helps me understand what's going on, so my staff and I can relax and concentrate on making my patients more comfortable.

CDAnetplus provides the most flexible, up-to-date E-mail, credit card and cheque verification services available.

So relax. Call 1-800-267-6354 and find out how you can put **CDAnetplus'** leading edge management technology to work for you.



CDAnetplus

Dentistry's National
Information Network


**CANADIAN
DENTAL
ASSOCIATION**

Play in an Aurum Ceramic/Classic Golf Tournament in '95 and

WIN A SHOT AT \$1,000,000

HOW TO QUALIFY

Individual qualifiers will be chosen by a closest-to-the-hole competition at a designated Par 3 hole during regular play at each Aurum Ceramic/Classic tournament. Each eligible qualifier will be entitled to one of 20 shots during special "Shoot-Outs" held following regular play at the Kananaskis, AB or the CDA tournaments.

GET A HOLE-IN-ONE, WIN A MILLION!

- Pot a Hole-In-One as a Shoot-Out Qualifier- you win \$1,000,000 (paid out as an annuity of \$25,000 per year over 40 years). And, you'll qualify for the legendary Tournament of Aces, a 36 hole event held at the prestigious TPC course at Woodlands, Texas - all expenses paid. Once there, you'll be competing for more than \$1 million in additional cash and prizes.
- Consolation prizes contributed by:
 - Midland Walwyn
 - Nobelpharma Canada Inc.
 - Canadian Airlines International
 - Château Cartier Sheraton

SUPPORT THE DENTISTRY CANADA FUND

You'll be helping to raise moneys in support of Canada's only non-profit, charitable organisation dedicated to encouraging optimal oral health for all Canadians. Twenty dollars from each entry fee paid at an Aurum Ceramic/Classic Golf Tournament will be donated to the Dentistry Canada Fund. A tax receipt in that amount will be issued to each golfer.

SPACE IS LIMITED! SIGN UP TODAY!

For more information and to reserve your place, call our Golf Registration Department:



MILLION DOLLAR SHOOT-OUT QUALIFYING TOURNAMENTS

Vernon, BC	May 5	Predator Ridge Golf & C.C.
Castlegar, BC	May 6	Castlegar Golf
Vancouver, BC	May 12	Seymour Golf & C.C.
Medicine Hat, AB	June 9	Medicine Hat Golf & C.C.
St. Catharines, ON	June 9	Rockway Glen Golf & C.C.
Calgary, AB	June 12	Pinebrook Golf & C.C.
Grande Prairie, AB	June 16	Grande Prairie Golf & C.C.
Kelowna, BC	June 23	Predator Ridge Golf & C.C.
Cornwall, ON	June 30	Summer Heights Golf Links
Winnipeg, MB	July 14	Quarry Oaks
Kananaskis, AB	July 14	Kananaskis Golf & C.C.
Edmonton, AB	Aug. 10	Indian Lakes
Renfrew, ON	Aug. 25	Arnprior Golf & C.C.
CDA Tournament	Aug. 27	Chaudière Golf Club
Victoria, BC	Sept. 8*	Olympic View
Kamloops, BC	Sept. 8*	Rivershore
Montreal, QC	Sept. 14*	Club de Golf le Cardinal
New Glasgow, NS	Sept. 15*	Abercrombie
Lethbridge, AB	Sept. 22*	Paradise Canyon

* qualify for either Kananaskis or CDA Shoot-Out in 1996

TOLL FREE
1-800-661-1169

Sponsored by



INFECTION CONTROL



Survey To Assess Dental Practitioner's Knowledge Of Infectious Disease

Joel B. Epstein, DMD, MSD

Rick G. Mathias, MD, FRCP(C)

Gary B. Gibson, DDS

ABSTRACT

The prerequisite to understanding the need for infection control practices in dentistry is a sound knowledge of infectious disease and the potential for its transmission in the dental setting. To assess the infectious disease knowledge-base of dental practitioners, a questionnaire was developed and distributed to dentists in British Columbia. The survey results showed that many of the mechanisms, routes and risks for the transmission of viral pathogens in the dental setting are not clearly understood by dentists. Continuing education is needed to ensure that compliance with current infection control recommendations, and the provision of appropriate patient care, continues to be based on a clear understanding by dentists of the mechanisms of infection. By identifying the current infectious disease knowledge-base of dentists, this survey may permit more specifically-directed continuing education programs to be offered.

SOMMAIRE

Pour comprendre qu'on doit adopter des usages visant à réduire les risques d'infection en dentisterie, il faut d'abord une bonne connaissance des maladies infectieuses et de la possibilité qu'elles se transmettent dans le milieu den-

taire. Afin de mesurer les connaissances fondamentales que les praticiens dentaires peuvent avoir touchant ces maladies, on a préparé un questionnaire et on l'a distribué aux dentistes de la Colombie-Britannique. Or, les résultats obtenus ont démontré qu'ils ne comprennent pas clairement un bon nombre de mécanismes, de voies et de risques associés à la transmission des agents pathogènes viraux dans leur milieu. Il faut donc des cours en éducation permanente pour assurer que l'obéissance aux recommandations actuelles visant à contrer les risques d'infection, et l'administration de soins appropriés aux patients, restent fondées chez les dentistes sur une compréhension claire des mécanismes d'infection. Grâce à ce sondage qui a déterminé leurs connaissances fondamentales à ce sujet, on sera sans doute en mesure d'offrir en éducation permanente des cours orientés de façon plus précise.

Introduction

There has been considerable debate recently on the actual risk for transmission of infectious disease in the dental setting, and the need for infection control. This debate has focused primarily on the potential transmission of blood-borne viral pathogens such as the human im-

munodeficiency virus (HIV), the hepatitis B virus (HBV), and the hepatitis C virus (HCV).¹⁻⁸

Both the Canadian and British Columbian recommendations on infection control state that precautionary procedures must be based on a demonstrated risk of infectious disease transmission, and not on a theoretical risk alone. In Canada, the basic approach to infection control recommendations has emphasized voluntary compliance by individual practitioners. This approach depends on dentists having a thorough understanding of both infection and infection control.

Methods

A previous survey examined the infection control knowledge and activities of a group of dental specialists in British Columbia.⁸ Based on this survey, a new questionnaire was developed for the current study and distributed to general dentists in B.C. The intent was to assess their knowledge of infectious disease and the transmission of infection, as well as their infection control practices.⁸⁻¹⁰

The participants' sex, years in practice, and practice location were noted. Knowledge-based questions were used to gather information on the dentists' understanding of specific viral pathogens, including the herpes simplex virus (HSV), HBV, HCV, HIV, and

JOURNAL

June/
Juin
1995
Vol. 61
No. 6



Mycobacterium tuberculosis bacillus (TB), that pose a risk of exposure during dental treatment. Questions assessing risk were recorded on a five-point scale (none, low, minimal, moderate, high).

Questionnaires were mailed to all 2,234 licensed dentists in B.C., of whom 2,113 were in active practice, and 121 were either out-of-province or retired. Participation in the questionnaire was voluntary. Personal data and responses were not linked, allowing the data to be treated anonymously. A follow-up questionnaire was mailed to a randomly-selected sample of 100 non-responding dentists. The results of the follow-up questionnaire were compared to the results obtained from the first mailing to determine if there were any differences in responses between the two groups. Data was analyzed using Excell (Microsoft, Kirkland, Wash.) and SPSS (Release 4.0). Chi square tests were used for categorical variables and ANOVA was used for comparisons of means of three or more measures.

Results

In the first mailing, 715 questionnaires were returned by 637 male and 78 female respondents for a response rate of 32 per cent. General practice dentists accounted for 91.9 per cent of the respondents while specialists accounted for eight per cent. In the subsequent follow-up sample of 100 randomly-selected dentists, 28 males and seven females returned questionnaires, resulting in a final response rate of 35 per cent.

No significant differences were found when the responses from the initial survey group were compared to those of the follow-up group. Eighty-nine per cent of responders in the initial group were male, compared to 80 per cent in the follow-up group. The mean ages of males in the two groups were 42.7 and 42.3, respectively, while those of females were 36.2 and 36.1. In the first group, 91.9 per cent of respondents were general dentists, compared to 91.7 per cent in the follow-up group. The comparability of the initial and follow-up respondents, and the simi-

larity of the results obtained, were such that the data presented in this paper represents the combined results for both groups.

Demographic questions revealed that 81.5 per cent of survey respondents were Caucasian and 15 per cent oriental. More than half, 51 per cent, of respondents had been in practice for more than 15 years. Sixteen per cent had been in practice for five years or less, another 16 per cent had been practising for six to 10 years, and 17 per cent for 11 to 15 years. The location of the dental practice was also noted, and responses were assessed by comparing large urban practices to those in other locations.

Participants were questioned to assess their understanding of risk of infection through kissing, as well as through contacting contaminated saliva on dental records, dental radiographs, office surfaces and dental burs (**Table I**). HSV was thought to be moderately infectious through kissing, followed closely by HBV. HIV was considered to be the least contagious.

Similarly, the presence of virus on surfaces, whether records, radiographs or general surfaces, was not seen as a significant infectious risk. Viruses on burs were believed to be infectious at the medium risk level, but less than kissing for HSV, and the same as kissing for HBV and HIV.

To obtain more explicit data on perceived exposure, dentists were queried on the risks of transmission on intact skin and intact mucosa, percutaneously and surgically (**Table II**). Exposure to HBV or HIV on skin was identified at a low to non-existent risk level, while exposure on mucosa was identified at a low to moderate risk level. A lower risk was identified with kissing, which is essentially also mucosal exposure. This response assumes exposure of the upper respiratory tract mucosa, and not the columnar mucosa of the genital tract.

Exposure to influenza on skin was identified at a higher, if still low, risk level, but only at a moderate risk level on a mucosal sur-

face. This result occurred even though the normal route of influenza transmission is via the nasopharyngeal mucosa.

Percutaneous exposures were perceived to be high-risk events, with exposure to HBV posing a greater risk of infection than exposure to HIV. The risk from surgical exposures was felt to be only slightly higher than the risk from percutaneous exposures, and may have been rated higher on the basis of greater tissue exposure.

The perceived risk of infection from dental aerosols was explicitly rated (**Table III**). Virus which is aerosolized comes in contact with skin and nasopharyngeal mucosa. These exposures were associated with a risk of infection by 33 to 67 per cent of respondents. HSV transmission following the aerosol contact of virus with a mucosal surface was seen as a risk by 55 per cent of respondents, while 87 per cent recognized that TB is spread by droplet nuclei in an aerosol. Masks are a recommended method of prevention of TB infection, and are thought to decrease the risk of droplet nuclei. As well, 51 per cent of respondents felt that masks reduce patient odors.

The participants' assessment of the level of protection provided by gloves and masks in preventing transmission are shown in **Tables IV and V**. This question was included to ascertain the participant's beliefs on the level of protection afforded to both dentists and patients by glove use. In medical procedures, gloves were traditionally worn to prevent the surgeon's hands from contaminating sterile surgical areas, thereby preventing disease transmission from provider to patient. This level of protection was identified as the sole benefit of glove use by only one per cent of the participants in this survey, although it was part of most answers. Four per cent of the respondents identified the interruption of patient-to-patient transmission routes as the primary effect of glove use, and this was also part of the majority of answers. Similarly, three per cent of respondents believed that the prevention

of disease transmission from patient to provider was the major reason for glove use, and 22 per cent cited the transmission of disease along the patient-provider axis in either direction. Most respondents thought that gloves were used to prevent transmission along all three routes. Although the rationale will be presented in the discussion, the authors are of the opinion that gloves are a poor protector against sharps, and percutaneous transmission via sharps, from patient to provider.

Only 170 respondents (24 per cent) answered the question assessing the dentists' understanding of the serologic markers of HBV infection (HBsAg +, anti-HBs -, and anti-HBc +) correctly. Of the remaining participants, 98 respondents (14 per cent) gave incorrect responses, and 451 respondents (63 per cent) did not know the answer.

The potential relationship between providers in general dental and specialty practice, the number of years in practice (10 years or less, and more than 10 years), and the location of the practice (large urban practice versus other locations) was assessed. General dentists had more confidence in gloves as an adequate mode of protection from both patient-to-dentist transmission ($p = 0.058$) and patient-to-patient transmission ($p = 0.026$) than specialists. No other differences were observed between the responses for the two groups.

When providers were grouped according to the number of years in practice, however, differences were seen in several response

Table I

Average Score of Assessment of Risk of Infection*

Risk of Infection when . . .	Potential Viral Pathogen		
	HSV	HBV	HIV
Kissing	2.9	2.3	1.6
On records	0.9	1.2	0.8
On x-rays	1.1	1.2	0.4
On surfaces	1.0	1.4	0.5
On burs	1.9	2.3	0.5

* average score for respondents using 0 = none, 1 = low; 2 = medium; 3 = moderate; 4 = high

categories. Respondents who had been in practice for 10 years or less were more often correct in their interpretation of HBV serology (38 per cent compared to 17 per cent) than respondents who had been in practice for more than 10 years, and fewer of them reported not knowing the correct response (48 per cent compared to 71 per cent; $p = 0.00000$). Similarly, more of the 10 years and under group identified that the risk of HSV transmission is greatest through kissing ($p = 0.00347$), and that there is less risk of HSV being transmitted through contact with contaminated records ($p = 0.00002$), radiographs ($p = 0.00086$) and/or surfaces ($p = 0.00806$). This group also believed that there is a greater risk of HBV transmission when the virus is present on records ($p = 0.00018$), radiographs ($p = 0.00533$), or surfaces ($p = 0.00066$), but no differences were identified between the responses given by the two groups with respect to HBV being present on dental burs. There were also no differences in

their perceived risk of HIV transmission through kissing, or through the saliva on dental burs, but respondents who had been in practice for 10 years or less identified a greater risk when HIV was present on records ($p = 0.00162$), X-rays ($p = 0.00790$), or surfaces ($p = 0.01796$).

Respondents who had been in practice for more than 10 years felt that exposure to HIV during surgery presented a lower risk for transmission than did the respondents who had been in practice for 10 years or less ($p = 0.02530$). Similarly, more of them felt that there is an increased risk for transmission of HBV ($p = 0.02972$), HIV ($p = 0.05703$), HCV ($p = 0.02068$) and TB ($p = 0.0168$) via aerosols.

Of the dentists responding, 534 (75 per cent) felt that they had received sufficient information on infection control.

Discussion

In this survey, we assessed the extent to which general dentists in B.C. understand the possible trans-

Table II

Average Score of Estimated Risk of Viral Transmission Following Exposure*

Exposure On/In:	to health-care worker from patient			to patient from health-care worker		
	HBV	HIV	Flu**	HBV	HIV	Flu**
Intact skin	0.7	0.3	1.2	0.7	0.3	1.2
Intact mucosa	1.7	0.9	2.2	1.7	1.0	2.2
percutaneous	3.0	2.3	2.0	2.9	2.3	2.0
Surgical	3.1	2.6	2.0	3.2	2.7	2.1

*average score for respondents using 0 = none, 1 = low; 2 = medium; 3 = moderate; 4 = high

**influenza

**Table III****Risk of Transmission of Infectious Disease Via Dental Aerosols**

Agent	Number	Yes (per cent)	No (per cent)	Don't Know (per cent)
Hepatitis B virus	717	477 (67)	192 (27)	48 (7)
Hepatitis C virus	721	296 (41)	167 (23)	256 (36)
Human immunodeficiency virus	714	238 (33)	408 (57)	68 (10)
Herpes simplex virus	718	398 (55)	227 (32)	93 (13)
Tubercle bacillus	722	625 (87)	51 (7)	46 (6)

mission of the pathogens of particular importance to health-care workers, namely HBV, HCV, HIV, HSV, influenza viruses, and TB. The respondents recognized that the route of transmission — and not the source of the virus (either the health-care worker (HCW) or patient) — is the relevant issue with respect to infection control. While HIV has been the overwhelming concern for both the public and the profession, transmission of HIV infection from dentist to patient has not been demonstrated, with the possible exception of a single cluster in Florida.

Several clusters of HBV transmission have been reported; HSV is frequently present in saliva and is transmitted by oral routes or through contact with intact mucosa; and influenza is transmitted via the upper respiratory mucosa. There is no documented risk of infection to either the HCW or the patient for these viruses via intact skin. Despite this, survey respondents estimated a low risk of infection for exposure to all of these pathogens on intact skin, with HIV estimated at about one-half the risk of HBV and influenza. Intact mucosa was not felt to be as effective a barrier to infection as skin, with the perceived risk increasing by about one-third.

In contrast to the survey findings, the authors rate exposure on intact skin as posing no risk; the risk for intact nasopharyngeal mucosa exposure as low to none; and the risk for percutaneous exposure as high for HBV but low for HIV. If these surfaces are intact and the quantity of virus is not extreme, the risk of HBV, HCV and HIV transmission is none.

Survey respondents did not identify any differences in the risk for transmission of HBV and influenza — a clear indication that they did not understand the transmission routes of these diseases. The responses to the questionnaire reflect a general impression of increased risk of HBV transmission as compared to HIV. Providers do not appear to recognize the epidemiologic data regarding the transmission of HIV, which does not support an increased risk to patients in the health care setting. The only known exception is the cases in the Florida cluster.^{1,2,11,12}

Questions on percutaneous and surgical risk suggested a high estimate of the transmission risk for blood-borne pathogens. The risk of transmission was seen to be highest for HBV, with a high estimate of risk for HIV, and little increased risk for influenza. The difference in the route and risk of transmission for HBV and HSV was not recognized, possibly because HBV was perceived to be almost as infectious as HSV via the oral route.

Respondents recognized that fomites are rarely a source of infection, but contaminated X-rays were seen as being more likely to result in transmission than dental records. In fact, there is no risk of transmission from a surface for any of the viruses included in this study. Records, radiographs and surfaces represent a theoretical risk only. If a virus was present on these materials, it would be exposed to environmental conditions, and it would need to be transported, presumably by fingers or instruments, before it could be transmitted to the provider or patient.

Respondents also recognized the higher risk of parenteral transmission from dental burs. The authors consider exposure to a bur contaminated with any of these three viruses to be a high risk occurrence, and agree with the respondents that HBV is more infectious than HIV, even via a bur.

Responses to these questions indicate that additional education is needed to ensure that providers fully understand the ways and means of reducing the transmission risk of infectious disease.

The highest risk of transmission for HSV was identified as kissing. However, the presence of HBV on surfaces was felt to have a higher risk than the presence of HSV. While there appeared to be an understanding that HIV is less readily transmitted than either HSV or HBV, kissing was still seen as a low-risk activity for HIV transmission, even though there is conclusive evidence that HIV is not transmitted by casual contact, including kissing.

A risk of blood-borne pathogens being transmitted via dental aerosols was reported by many participants, although this route of transmission has not been demonstrated. In fact, two-thirds of the survey respondents felt that HBV could be transmitted via aerosols; 41 per cent identified a similar risk for HCV; and one-third stated they did not know the correct answer. None of these viruses is actually transmitted by droplet spread.

A risk of TB transmission via aerosols was recognized by 87 per cent of respondents and for HSV by 55 per cent. The risk of influenza virus transmission via the upper respiratory mucosa was recognized as being very high.



However, this risk was seen as very low for HBV and HIV, even though the risk of HBV and influenza transmission were perceived as being almost the same. As the transmission risk for blood-borne pathogens such as HIV and HBV via aerosols is very low to non-existent, masks would not be expected to reduce this risk any further.

It was expected that percutaneous and surgical exposure would be seen as high risk events, particularly for transmission from patient to HCW, as this is the mode of transmission of HBV. HIV transmission via this route was seen to have lower risk. Surgical exposure was seen to carry the highest risk for HBV transmission, and a lesser but still high risk for HIV transmission. The participants likely recognized that there was more potential to be exposed to a greater dose of organism during surgery than during a percutaneous sharps exposure. The difference in the transmission risk for HBV and HIV (up to 30 per cent for percutaneous HBV exposure, 0.3 per cent for HIV) appeared to be recognized. However, it is likely that the seriousness of infection by HIV may play a role in the participants' perception of transmission risk.

Glove use was felt to be effective in preventing transmission of blood-borne pathogens from patient to provider, provider to patient and in direct patient-to-patient transmission by about two-thirds of respondents.

While some studies have shown that gloves prevent disease transmission from infected provider to patient,¹¹⁻¹⁴ there is only limited data to indicate that they prevent infection of HCWs by blood-borne

Table IV

Prevention of Transmission of Blood-borne Pathogens by Use of Gloves

Wearing gloves protects against transmission	Number	(per cent)
1. From patient to provider	20	(3)
2. From patient to patient	23	(4)
3. From provider to patient	5	(1)
4. 1 and 2	14	(2)
5. 1 and 3	134	(22)
6. 1, 2 and 3	405	(67)

pathogens, and some studies actually provide evidence of a lack of protection. There is no evidence in the dental literature of transmission from patient to patient when the provider is not a carrier.^{9,15-17}

A report of a series of patients who acquired HSV from a dental hygienist who subsequently developed herpetic whitlow, as well as various reports of transmission from patients to dental care providers, suggest that the routine use of gloves may prevent the transmission of HSV.¹⁸⁻²⁰

The purpose of sterilization and disinfection procedures is to prevent transmission from patient to patient. Even careful adherence to recommended procedures on hand-washing and glove use may not prevent transmission. Clearly, if gloves are used directly from patient to patient without washing or changing, their effectiveness will be limited.

If patient-to-patient transmission of infection was the only concern, hand-washing alone should be sufficient. But the main function of gloves is to protect the patient from the provider. It is still unclear whether the use of gloves

reduces infection rates in dentistry. Much more protection of HCWs is attributed to the use of gloves than is supported in the literature.

There is increasing concern about the potential risk of TB transmission in dentistry.^{21,22} A retrospective investigation was conducted to determine the risk of TB transmission from patient to provider in HCWs caring for both HIV-infected and HIV-negative patients hospitalized with active TB.²² In a follow-up of 85 HIV-positive cases, seven cases of TB were seen in HCWs. Conversely, only two cases of TB in HCWs could be attributed to the 1,079 HIV-negative patients.²²

To date, increases in the prevalence of TB have been isolated to clearly defined geographic areas, but it is anticipated that the disease will eventually spread more widely.²¹ Transmission of TB from an infected dentist to 15 patients has been reported.²³ There has also been a recent report suggesting the possible transmission of a multi-drug-resistant strain of TB to one dental provider, and from this provider to another practitioner.²⁴ However, an assessment of dental

Table V

Effectiveness of Wearing Mask in Protection of the Provider and Patient

Agent	Number	Yes (per cent)	No (per cent)	Don't Know (per cent)
Hepatitis B virus	733	240 (33)	453 (62)	40 (5)
Human immunodeficiency virus	711	196 (28)	475 (67)	44 (6)
Herpes simplex virus	711	295 (41)	375 (53)	41 (6)
Tubercle bacillus	717	511 (71)	158 (22)	48 (7)
Garlic	707	364 (51)	296 (42)	47 (7)



providers employed by the U.S. Federal Bureau of Prisons and the Indian Health Service, who may be at increased risk of exposure, did not demonstrate a difference in TB prevalence relative to the general population.^{24,25} Thus current data suggests that the risk of TB transmission to dental-care workers is low.

Our survey shows that dentists have a poor understanding of the role that aerosols play in the transmission of blood-borne pathogens. Aerosols were identified as a potential route of transmission for HBV by two-thirds of respondents; HCV by less than half; and HIV by more than one-quarter. While HSV is a respiratory virus, less than half of the survey respondents identified a risk of transmission via aerosols. The perceived risk for transmission of the blood-borne pathogens was estimated to be highest for HBV. This likely reflects a general understanding by dentists of the increased risk for transmission of HBV as compared to other blood-borne pathogens, but not of the route of transmission.

Although masks may provide some protection against TB and HSV transmission, about two-thirds of respondents felt that they were a valuable mode of personal protection and 41 per cent reported the use of masks for protection against HSV. One-half of respondents felt that masks were useful for controlling oral malodor.

When an aerosol of *Mycobacterium chelonae*, or latex spheres, was used to assess the protection levels offered by various masks,²⁶ even the least efficient mask tested proved to be more than 97 per cent effective against the penetration of particles less than one micron in size. In this study, surgical masks were found to be the least effective at preventing penetration. The most efficient mask, a HEPA respirator, was 99 per cent effective.²⁶

The importance of masks in the prevention of HSV transmission is somewhat limited, largely because most providers are already infected with HSV, and hence not susceptible, at least in the naso-

pharyngeal mucosa. Clearly, the role of masks as barriers cannot be understood when the risk assessment is inaccurate. In this context, it is not surprising that they were seen to be effective in preventing the transmission of blood-borne pathogens — even though there is evidence of no transmission by this route.

A survey of 342 dental professionals found that those who had been in practice for more than 10 years had the least knowledge of AIDS epidemiology and the signs and symptoms of AIDS.²⁷ In another study, the responses of practitioners who had been in practice less than 10 years were similar to those provided by students.²⁸ This group was less apprehensive about HIV transmission, primarily because they had a better knowledge of infection control. However, education did not appear to affect the opinions of practitioners with respect to the safety of treating HIV-positive patients.²⁸

The results of the current survey were compared by assessing respondents who had been in practice 10 years or less against those who had been practising for more than 10 years. In a number of responses, it was seen that dentists with less than 10 years in practice were more often accurate in their assessment of the serologic markers of HBV and in their general assessment of the risk for transmission of HSV and HBV. However, a high assessment of the risk for transmission of HIV was evident.

The more experienced group identified a somewhat increased risk for HSV transmission in the dental environment, and a lower risk for HIV and HBV transmission. The lower surgical risk for HIV transmission was also identified by the more experienced group. This belief is likely validated by their personal experiences, and has also been identified by a wide range of studies. The location of practice, i.e. large urban settings versus smaller centres, had little or no bearing on the responses given to knowledge-based questions.

The majority of dentists who responded to the survey felt that they had received sufficient information about infection control (75

per cent). However, it is evident that infectious disease, the routes of transmission of important pathogens, and the effectiveness of infection control methods are not well understood. Continuing education should be directed at improving the knowledge of infectious disease transmission, as well as the mechanisms and routes of transmission. Only in this way can an understanding of the need for and compliance with national infection control guidelines be achieved. Certainly, continuing interest in infectious disease and infection control will be seen on the part of the profession, auxiliary dental personnel and the public. ■

Acknowledgements: This survey was supported, in part, by a grant from the College of Dental Surgeons of British Columbia.

Dr. Epstein is head of the division of oral medicine and clinical dentistry, Vancouver Hospital and Health Sciences Centre, and a member of the medical/dental staff of the British Columbia Cancer Agency. He is also a clinical professor at the University of British Columbia and a research assistant professor at the University of Washington in Seattle, Washington.

Dr. Mathias is a professor and head of the division of public health practice, department of health care and epidemiology, University of British Columbia.

Dr. Gibson is an assistant professor and head of the division of hospital dentistry, University of British Columbia.

Reprint requests to: Dr. J. Epstein, British Columbia Cancer Agency, 600 West 10th Ave., Vancouver, B.C. V5Z 4E6.

References

1. Gruninger, S.E., Siew, C., Chang, S.B. et al. Human immunodeficiency virus type 1 infection among dentists. *JADA* 123:57-64, 1992.
2. Capilouto, E.I., Cotton, D., Weinstein, M.C. et al. What is the dentist's occupational risk of becoming infected with hepatitis or the human immunodeficiency virus? *Am J Public Health* 82:587-589, 1992.
3. Epstein, J.B., Scully, C. and Porter, S.R. The risk of transmission of Human Immunodeficiency virus in dental practice. *Oral Health* 82:33-38, 1992.
4. Editorial. Risk of HIV transmission during dental treatment. *Lancet* 340:1259-1260, 1992.



5. Klein, R.S., Phelan, J.A., Freeman, K. et al. Lower occupational risks of human immunodeficiency virus infection among dental professionals. *N Engl J Med* 318:86-90, 1988.
6. Epstein, J.B., Buchner, B.K. and Bouchard, S. Hepatitis B and Canadian dental professionals. *J Can Dent Assoc* 50:555-559, 1984.
7. Epstein, J.B., Porter, S.R. and Scully, C. Non-A, non-B hepatitis and dentistry: A status report for the American Journal of Dentistry. *Am J Dent* 7:36-38, 1992.
8. Epstein, J.B., Mathias, R.M. and Bridger, D.V. Survey of knowledge of infectious disease and infection control practices of dental specialists. *J Can Dent Assoc* 61:35-37, 40-44, 1995.
9. Noble, M.A., Mathias, R.G., Gibson, G.B. et al. Hepatitis B and HIV infections in dental professionals: Effectiveness of infection control procedures. *J Can Dent Assoc* 57:55-58, 1991.
10. Epstein, J.B., Rathee, N.N. and Mathias, R.G. Infection control: survey of dental health care workers. *Oral Health* 79:53-56, 1989.
11. Centers for Disease Control. Update: investigations of patients who have been treated by HIV-infected health-care workers. *MMWR* 41:344-346, 1992.
12. Epstein, J.B. Infectious disease, infection control and the effect of the Florida cluster of HIV infection. *J Can Dent Assoc* 60:925-926, 1994.
13. CDC. Recommendations for preventing transmission of Human Immunodeficiency virus and Hepatitis B virus to patients during exposure-prone invasive procedures. *MMWR* 40(RR-8):1-9, 1991.
14. Gooch, B., Marianos, D., Ciesielski, C. et al. Lack of evidence for patient-to-patient transmission of HIV in a dental practice. *JADA* 124:38-44, 1993.
15. Depaola, L.G., Ward, M.A., Grace, E.G. et al. Dental office compliance evaluation for the OSHA bloodborne pathogens standard and hazard communication program. *JADA* 124:61-65, 1993.
16. Gonzales, E. and Naleway, C. Assessment of the effectiveness of glove use as a barrier technique in the dental operator. *JADA* 117:467-469, 1988.
17. Rheingold, A.L., Kane, M.A. and Hightower, A.W. Failure of gloves and other protective devices to prevent transmission of Hepatitis B virus to oral surgeons. *JAMA* 259:2258-2260, 1988.
18. Gunbay, T., Gunbay, S. and Kandemir, S. Herpetic whitlow. *Quintessence Int* 24:363-364, 1993.
19. Merchant, V.A., Molinari, J.A. and Sabes, W.R. Herpetic whitlow: report of a case with multiple recurrences. *Oral Surg Oral Med Oral Pathol* 55:568-571, 1983.
20. Rowe, N.H., Heine, C.S. and Kowalski, C.J. Herpetic whitlow: an occupational disease of practicing dentists. *JADA* 105:471-473, 1982.
21. Curtis, J.R., Hooton, T.M. and Nolan, C.M. New developments in tuberculosis and HIV infection: an opportunity for prevention. *J Gen Intern Med* 9:286-294, 1994.
22. Di Perri, G., Cadeo, G.P., Castelli, F. et al. Transmission of HIV-associated tuberculosis to healthcare workers. *Infect Control Hosp Epidemiol* 14:67-72, 1993.
23. Roderick-Smith, W.H., Mason, D.K., Davies, P. et al. Intra-oral and pulmonary tuberculosis following dental treatment. *Lancet* 1:842-844, 1982.
24. Coronado, V.G., Beck-Sague, C.M., Hutton, M.D. et al. Transmission of multidrug-resistant *Mycobacterium tuberculosis* among persons with human immunodeficiency virus infection in an urban hospital: epidemiologic and restriction fragment length polymorphism analysis. *J Infect Disease* 168:1052-1055, 1993.
25. CDC. Self reported tuberculin skin testing among Indian Health Service and Federal Bureau of Prison Dentists-1993. *MMWR* 43:209-211, 1994.
26. Chen, S.K., Vesley, D., Brosseau, L.M. et al. Evaluation of single-use masks and respirators for protection of health care workers against mycobacterial aerosols. *Am J Infect Control* 22:65-74, 1994.
27. Soto, J.C., Levy, M.D., Allard, R. et al. Determinants of AIDS preventive behaviour among dental professionals. *Can J Pub Health* 84:128-131, 1993.
28. Rankin, K.V., Jones, D.L. and Rees, T.D. Attitudes of dental practitioners and dental students towards AIDS patients and infection control. *Am J Dentistry* 6:22-26, 1993.

GREAT Two Striper® REBATES

- ☐ \$3 for purchasing 15
- ☐ \$7 for purchasing 25
- ☐ \$14 for purchasing 40
- ☐ \$28 for purchasing 75
- ☐ \$70 for purchasing 100

To Receive Your Rebates... Forward this coupon and a copy of an authorized dealer invoice indicating appropriate purchase(s) between 5/1/95 and 8/31/95.



Dr. _____

Address _____

City _____ Prov. _____ Postal Code _____

MAIL TO: Premier Canada • 480 Hood Road, Unit #3 • Markham, Ontario L3R 9Z3

Rebates in local currency. Must be claimed by 11/30/95. Allow 4-6 weeks for processing. Maximum total rebate per dentist is \$200.00. Limited offer. Offer may be withdrawn without prior notice. ® Two Striper is a registered trademark of Abrasive Technology, Inc.

north america's #1 diamond for over a decade

INFECTION CONTROL



Compliance To Recommended Infection Control Procedures: Changes Over Six Years Among British Columbia Dentists

Gary B. Gibson, DDS

Richard G. Mathias, MD, FRCP(C)

Joel B. Epstein, DMD, MSD

ABSTRACT

Over the last decade, in response to the heightened awareness of HBV and HIV infections, world health authorities have produced specific infection control recommendations for dental practices. Surveys have been done in various countries to investigate the level of compliance to these recommendations. This paper reports on the changes in compliance over a six year period among British Columbia dentists, as indicated from four volunteer surveys conducted between 1987 and 1993. During that period, the percentage of dentists who reported taking a medical history for each new patient increased from 70 per cent to 99 per cent. The routine use of gloves increased from 61 per cent to 95 per cent, and of face masks from 49 per cent to 83 per cent. In 1993, most dentists (91 per cent) used a new pair of gloves with each patient, up from 62 per cent three years earlier.

Dentists also reported on their sterilization and hygiene methods. Autoclavable handpieces were used by 66 per cent of respondents in 1990, and by 74 per cent in 1993. High-speed autoclavable handpieces were used by 83 per cent of dentists in 1993, but only 62 per cent sterilized these handpieces. Similarly, 65 per cent re-

ported using low-speed autoclavable handpieces, but only 47 per cent sterilized them. It is apparent that disinfection of handpieces and intraoral instruments is still an important part of regular operator hygiene. Biologic monitors were used by 61.6 per cent of respondents to test the efficiency of their office sterilizer in 1993.

Over the six-year period of this study, the rate of hepatitis B immunization increased from 45.7 per cent to 87.7 per cent. Pre- and post-vaccination serologic testing to determine markers for hepatitis B was reported by 67 per cent of dentists. Only 23.6 per cent of respondents correctly interpreted a hypothetical HBV blood test laboratory report.

The results of these surveys indicate a commendable increase in the number of dentists who regularly comply with recommended infection control procedures. While compliance is at its highest level ever, it is still not 100 per cent, however. Continuing education by health authorities is still required to improve Canadian dentists' knowledge and understanding of infection control, viral serology and safe office practice in the 1990s. The public's heightened awareness and expectations of good infection control programs are enhancing the importance of this area as a marketing strategy for dental practices.

SOMMAIRE

Au cours de la dernière décennie, plus conscientes des risques d'infection par les virus HBV et HIV, les autorités mondiales de la santé ont formulé des recommandations précises visant à les réduire dans les cabinets des dentistes. Dans différents pays, on a effectué des sondages pour savoir dans quelle mesure on suivait ces recommandations. Aussi, dans cet article, est-il question, au cours d'une période de six ans, des changements d'attitude à cet égard parmi les dentistes de la Colombie-Britannique, changements qu'ont révélé quatre sondages faits par des volontaires de 1987 à 1993. Au cours de cette période, le pourcentage des dentistes qui ont déclaré noter l'histoire médicale de tout nouveau patient a augmenté de 70 à 99 pour cent. Le port régulier de gants a augmenté de 61 à 95 pour cent, et celui de masques de 49 à 83 pour cent. En 1993, la plupart des dentistes (91 pour cent) prenaient une nouvelle paire de gants pour chaque patient, alors qu'ils n'étaient que 62 pour cent trois ans plus tôt.

Les dentistes ont également fait part de leurs méthodes de stérilisation et de leurs mesures d'hygiène. Ainsi, en 1990, 66 pour cent utilisaient des pièces à main allant à



l'autoclave contre 74 pour cent en 1993. En 1993 encore, 83 pour cent utilisaient des pièces à main à grande vitesse allant à l'autoclave, mais seulement 62 pour cent les stérilisaient. Pareillement, 65 pour cent utilisaient des pièces à main à faible vitesse allant à l'autoclave, mais seulement 47 pour cent les stérilisaient. Il est évident que la désinfection des pièces à main et des instruments intrabuccaux reste une mesure importante de l'hygiène ordinaire dans la salle d'opération. Toujours en 1993, 61,6 pour cent utilisaient un moniteur biologique pour tester l'efficacité de leurs stérilisateur.

Pendant les six années qu'a duré l'étude, le taux d'immunisation contre l'hépatite B est passé de 45,7 pour cent à 87,7 pour cent; 67 pour cent des dentistes ont subi des tests sérologiques avant et après avoir été vaccinés pour déterminer leur taux de marqueurs hépatiques. Seulement 23,6 pour cent ont interprété correctement un rapport de laboratoire hypothétique pour un test sanguin visant à détecter le virus HBV.

Les résultats de cette étude révèlent une augmentation louable dans le nombre de dentistes qui observent régulièrement les procédures recommandées en vue de réduire les infections. Bien que le taux de conformité soit plus élevé que jamais, il n'atteint pas cependant 100 pour cent encore. Il faut donc que les autorités de la santé poussent l'éducation permanente afin d'améliorer chez les dentistes canadiens la connaissance et la compréhension des mesures pour réduire les risques d'infection, de la sérologie virale et de la pratique sûre au cabinet dans les années 1990. La conscience et les attentes accrues du public touchant les programmes visant à réduire les risques d'infection en haussent l'importance comme stratégie marchande pour les dentistes.

Introduction

In the last decade, national and international medical and dental bodies have developed infection control recommendations that are specific to dental practice. These organizations, including the Canadian Dental Association,¹ are to be commended for their efforts,

particularly in the area of education. An extensive educational program has been developed to reduce the transfer of communicable microorganisms, particularly the hepatitis B and C viruses and the human immunodeficiency virus (HIV), between patients and dental personnel.

Surveys have been undertaken in several countries, including Canada, to investigate the level of compliance with current infection control recommendations.²⁻⁵ This article reports on the changes in compliance with recommended infection control procedures by British Columbia dentists, based on the results of four volunteer surveys conducted in 1987, 1988, 1990 and 1993.

The objective of these surveys was to investigate the use and frequency of use of current infection control methods in private dental practice, including barrier devices, disinfection/sterilization procedures, and vaccination against hepatitis B. In addition, the 1993 survey investigated the number of dentists undergoing blood testing, before and after vaccination, to identify markers for hepatitis B, and it explored their knowledge of a hepatitis B blood test laboratory report.

This article reviews the results of the previous three surveys, as well as relevant 1993 results. Additional results from the second part of the 1993 survey, which pertained to the dentists' knowledge and understanding of infections and infection control, will be reported in a separate article.

Method

Infection control surveys were conducted by two methods. The first three surveys were undertaken during the 1987, 1988² and 1990³ annual meetings of the College of Dental Surgeons (CDS) of British Columbia, while the fourth survey was mailed to all dentists (2,113) practising in B.C. in 1993. In all cases, the survey instrument was a three-page questionnaire intended to elicit information on five topics — personal information, patient medical history, barrier techniques, office infection control procedures and personal infection control. The questionnaires

changed slightly over time, as some questions were added and others deleted. Therefore, in addition to the trends established by the four surveys, this article will also report singular information pertaining to infection control. In each survey, the completion and return of the questionnaire was voluntary and anonymous.

Results

The total number of dentists who responded to the four surveys was 130, 243, 157, and 750, respectively. Although the average response rate for the three surveys conducted during CDS's 1987, 1988 and 1990 annual meetings was 23 per cent, it increased to 36 per cent (750 of 2,113 dentists) for the 1993 mail-out survey. As some participants did not answer every question on the survey form, the results have been determined for responders only.

The mean age of all responders was 37.3 years, and the average number of years in private practice was 11.5. These figures varied only slightly between the four surveys.

Medical History

Survey results indicate that medical histories were taken by 70 per cent of dentists in 1987, and by 99 per cent in 1993. Questions to assess the risk factors for HBV and HIV were included in 75.8 per cent of the histories taken in 1987, and in 86.6 per cent of those taken in 1993. Similarly, in 1993 most dentists (90 per cent) reported periodically updating their patients' medical histories, a significant increase from the 78 per cent who did so in 1987.

An increase in the number of dentists providing services to HIV-positive patients and known carriers of HBV was also apparent between the 1987 and 1990 surveys. From 1987 to 1990, the number of dentists with HBV carriers in their practice rose from 52 per cent of all dentists to 66 per cent. A similar increase, from 11 to 29 per cent, was seen in the numbers of dentists treating HIV-positive patients. The treatment compliance of infected patients was not determined in the 1993 survey.



Barrier Devices

Table I shows that compliance with the routine use of barrier devices, i.e., gloves, face mask and eye protection, has increased. During the six years of this study, the routine use of gloves by dentists increased from 61 to 95 per cent, while the routine use of masks increased from 49 to 83 per cent. The use of eye protection varied slightly, but was close to the 90 per cent level in all years. **Table I** also indicates that 54 per cent of dentists wore a gown/tunic in their practice in 1993, and 79 per cent used rubber dam for restorations.

In the last two surveys, 62 per cent of dentists reported using a new pair of gloves with each patient in 1990, and 91 per cent in 1993; while 38 per cent washed and reused gloves with two or more patients in 1990, and four per cent did so in 1993.

Office Infection Control

Table II reports the methods that dentists used to clean office equipment, instruments and other items in 1993. For example, 35 per cent reported that instrument bracket tables and counter tops were only cleaned, but 65 per cent disinfected this equipment. Sterilization was the most commonly used method of cleaning hand and surgical instruments (82.5 per cent), but disinfection was preferred by 17.5 per cent of respondents. In most cases, these items were cleaned after each use (**Table II**). A small number of dentists (seven per cent) indicated that they sterilized bracket tables and counter tops once a day, in addition to cleaning them after each use.

In 1993, 714 of the 750 dentist surveyed reported using autoclavable handpieces. Sixty-five per cent used low-speed handpieces and 83 per cent used high-speed, for an average use of 74 per cent. The 1990 survey reported the average use of autoclavable handpieces as 66 per cent.

Similarly, in 1993, 3.5 per cent of dentists used dry heat sterilizers in their offices, 52.4 per cent used steam autoclave, 43.3 per cent chemical autoclave, 0.6 per cent glutaraldehyde units. A small

Table I

Changes In Use Of Barrier Devices When Treating All Patients

Device	1987(%)	1988(%)	1990(%)	1993(%)
Gloves	61	74	86	95
Face masks	49	60	81	83
Eye protection	88	87	87	92
Uniform/gown	—	—	—	54
Rubber dam	—	—	—	79

number, 0.3 per cent, used other types of sterilizers. Even in 1993, only 457 of 742 dentists (61.6 per cent) reported using a biologic monitor to test the efficiency of their office sterilizer.

Almost all of 747 dentists who responded to the questions on waste disposal (95 per cent) discard sharps in a rigid container separate from other waste. Sharps were most often disposed of in the regular garbage (43.7 per cent) and by contract with waste disposal company (39.7 per cent). Nine per cent of dentists sent sharps to their local hospital for disposal.

Personal Infection Control

Table III reports the changes seen in the rate of HBV immunization over the six-year period of the study. Between 1989 and 1993, compliance with this infection control procedure increased by 91 per cent.

The 1993 survey asked dentists if they underwent a blood test before and/or after vaccination to determine possible markers for hepatitis B. The responses indicated that 67 per cent of dentists had a blood test before vaccination and 67 per cent had one after vaccination.

Between 1987 and 1993, the percentage of dentists who had sustained one to five penetrating wounds from a needle, drill or other sharp instrument in the previous six months decreased from 86 per cent to 47 per cent. Similarly, in 1987, 14 per cent of responding dentists reported having sustained between five and 20 wounds in the previous six months, while only five per cent reported such incidents in 1993.

In the 1993 survey, dentists were also questioned on their understanding of a patient's hepatitis B blood-test results. The lab report read: HBsAg+ AntiHBs- AntiHBc+, indicating that the patient has active hepatitis B. Responses from the 719 dentists who responded to this question are tabulated in **Table IV**.

Discussion

The participants in these infection control surveys were recruited voluntarily. This may have caused a subject selection bias, which could temper the conclusions made from the data. In effect, the compliance levels identified by the survey may be higher than the actual compliance of B.C. dentists to recommended infection control procedures. Nevertheless, it is reasonable to compare the results of these surveys with those done in a similar manner, and to report on changes, or trends, in the behavior of dentists toward infection control. This, in turn, may encourage review of the recommended standards of infection control, as well as their adoption by Canadian dentists.

A summary of the Canadian Dental Association and American Dental Association recommendations for infection control was presented in a previous article by the authors.³ Based on the principle that history and examination cannot reliably identify all patients infected with blood-borne pathogens,^{6,7} these recommendations should be followed with all patients.

In a recent paper, Epstein⁸ demonstrated that compliance to current infection control recommendations may do more to protect patients from infected health care workers (HCWs) than to protect

Table II

Methods For Cleaning Office Equipment and Instruments After Each Use In 1993

Item	Clean only(%)	Disinfect(%)	Sterilize(%)
Dental chair	49	51	0
Bracket tables	35	65	0
Counter tops	35	65	0
Hand instruments	0	19	81
Surgical instruments	0	16	84
Low-speed handpieces	0	47	53
High-speed handpieces	0	38	62
Ultrasonic scalers	0	22	78
Elastic impressions	51	49	0
Impression trays	21	28	51
Models (if visibly soiled)	61	39	0

Table III

Changes In Hepatitis B Immunization Rates Among Dentists

	1987	1988	1990	1993
Number	59/129	126/243	128/157	657/749
Per Cent	45.7	51.9	81.5	87.7

B.C. dentists is a response, in part, to these interventions.

The results of this study appear to show a heightened awareness among B.C. dentists, over the six-year survey period, about the potential for infectious diseases to be transmitted in dental practices. This is indicated, without exception, by the reported increase in compliance with current infection control recommendations suggesting the use of barrier devices, autoclavable handpieces, and immunization for HBV. For example, the dentists' use of gloves and face masks for all patients increased by 56 per cent and 69 per cent respectively.

Although there is still some controversy regarding the true effectiveness of barrier devices,¹⁴⁻¹⁷ several studies¹⁸⁻²⁰ have assessed their efficacy in cross-infection control. It is apparent that the routine use of these protective devices can contribute significantly to the overall dental office infection control program.

The other important factor is patient perception, and the increasingly held belief that one is "safer" attending a dental office that employs the current methods of infection control. Horowitz's study²¹ indicates that dental office infection control procedures and professional compliance with universal precautions have strong appeal for patients. The marketing value of a good infection control program is therefore obvious. In addition, the majority of patients not only expect to see infection control practices in place, they want their dentist to provide information on the subject.

Two recent patient surveys found more than 80 per cent of respondents wanted more infection control information from their dentist.^{22,23} Runnels²² provides practical advice in this area, and presents several good suggestions on the basics of establishing a patient communication program in dental practices. Sharing infection control knowledge and information with patients can do much to allay public fear about the transmission of communicable diseases, especially AIDS, in dental practice. Horowitz²⁴ suggests that, in the absence of universal precautions for controlling infectious diseases,

HCWs from infected patients. This is supported by the results of earlier studies by the authors,^{2,3} who found no significant reduction in the rate of HBV infection in dentists who use barrier devices, take routine medical histories, or treat patients with identified risk factors for blood-borne infection. These studies need to be periodically updated, because the findings may be influenced by the length of time that a specific infection control measure has been in use.

This study found that dentists were most effectively protected from HBV infection following immunization. Non-immunized dentists were shown to have infection rates of 31 per cent, while the entire cohort had an infection rate of six per cent. The authors concluded that the ever-present hazard of receiving a penetrating injury from a sharp instrument (reported by 47 per cent of participants in 1993), which cannot be prevented by the use of barrier devices, makes immunization even more essential.

A significant increase in the number of dentists who accept patients with HBV and HIV was demonstrated over the three years of our studies. This number is consistent with reports by Epstein,⁸ Hardie,⁹ and Wilson.¹⁰ The study by Wilson et al suggests that young male dentists who work in group practices and attend postgraduate courses are more prepared to treat high-risk HBV/HIV patients. Studies by Rydman et al and Gerbert¹² in 1987 and 1988 identified the perceived risk of infection from patient to provider, as well as a fear of losing other patients, as two major reasons behind the refusal of practitioners to treat HIV/AIDS patients. A subsequent study by Gerbert¹³ indicates that educational intervention is a key factor in changing the attitude of dentists toward accepting infectious patients in their practices. National and provincial dental organizations in Canada are to be commended for their educational efforts in this regard. The gradually changing attitudes toward infection and infection control among



AIDS-related apprehension in dentistry is rational because the risk of HIV transmission is real, and is perceived as reasonable.

In 1993, most dentists used a new pair of gloves for each new patient. Only four per cent washed gloves and reused them with two or more patients. This is consistent with a 1991 survey of 1,200 dentists in England and Wales,²⁶ which indicated that 83 per cent of respondents wore gloves routinely for all patients and all procedures. This author addressed the question of reuse or single use in his review, and concluded: "The only safe approach is to assume that every patient may be a carrier of an infectious virus and, as a consequence, until effective methods of glove sterilization are demonstrated in clinical practice, and gloves can be shown not to deteriorate with use, advice that gloves be used for single patients only is difficult to reject."

The use of eye protection by B.C. dentists was found to be consistently high throughout this study. It is not known, however, whether it was worn to correct vision or for infection control.

Table II shows high compliance with CDA's recommendation that instruments and handpieces used in the oral cavity should be sterilized when possible, or else receive high-level disinfection. The exception to this trend is in the use of autoclavable handpieces. The results of the 1993 survey point to an inconsistency between the use of autoclavable handpieces and their reported sterilization. For example, 83 per cent of dentists reported using autoclavable high-speed handpieces, yet only 62 per cent reported sterilizing them. Similarly, while 65 per cent of dentists used low-speed autoclavable handpieces, only 47 per cent sterilized them.

This study did not determine the reasons for the moderate use and sterilization of autoclavable handpieces by B.C. dentists, but it appears that a significant number of dentists choose to disinfect handpieces, regardless of whether they could be sterilized or not. This compliance rate is similar to that reported in England²⁷ in 1993. Autoclavable handpieces were

Table IV

Responses To Interpreting a HBV Blood Test Laboratory Report Which Reads HBsAg+ AntiHBs- AntiHBe+

Interpretation	Number (T=719)	Per cent
Active hepatitis B (correct)	170	23.6
Post-vaccine positive response	64	8.9
Laboratory error; not a clinically possible combination	34	4.7
Not sure	451	62.7

owned by 90.6 per cent of 267 English dentists surveyed, but only 45.9 per cent indicated that they sterilized their handpieces routinely after each patient. In this survey, the reasons given by respondents for not sterilizing handpieces routinely included insufficient handpieces, fear of handpiece damage, and the cost of repairs and replacements. Wood¹⁷ suggests that excessive and frequent handpiece repair bills are forcing many dental practitioners to discontinue sterilizing handpieces between patients.

A 1989 United States survey²⁸ reported the use of autoclavable handpieces at 53 per cent. Again, the reasons for the low usage and even lower rate of sterilizing are not documented, but one other factor may be considered, namely the controversy²⁹⁻³¹ surrounding the cross-infection risks of dental handpieces. Whether or not the controversy is ultimately resolved scientifically, it is important to note that while dentists in Canada are not required to sterilize handpieces, five U.S. states, as of late 1992, had taken action to make this procedure mandatory.³² These laws are the direct result of the recommendations brought forward by American Dental Association (ADA), U.S. Food and Drug Administration (FDA) and Centers For Disease Control and Prevention (CDC), which state that surface disinfection of handpieces is not adequate, and sterilization between use is necessary.^{33,34}

Table II indicates that 49 per cent of 689 respondents disinfected elastic impressions in 1993. The remainder (51 per cent) indicated that impressions were cleaned by rinsing only. Similarly,

the majority of dentists (61 per cent) only cleaned stone casts (models) after visible soiling. ADA states that the disinfection of impressions is part of infection control,³⁵ and both CDA and ADA have provided guidelines indicating which disinfectants are compatible with various types of impression materials as well as stone casts. Molinari¹⁴ also provides guidelines to help dentists comply with this infection control recommendation.

Several health care organizations in the United States recommend weekly spore testing of dental office sterilizers,³⁶ and at least five states have mandated this procedure. In Canada, CDA recommends the monthly testing of heat sterilizers by biologic monitors and the maintenance of a record, or log, of test results. A biological monitoring service is provided by the University of British Columbia.

The regular use of a biologic monitor, inserted with the load during a regular sterilization cycle, will determine if a sterilization unit is functioning properly. Two recent studies^{37,38} have used biologic monitors to report on the effectiveness of dental sterilizers. These studies demonstrated sterilizer failure rates of 20 per cent and 4.4 per cent respectively. In our study, only 62 per cent of dentists complied with the recommendation for weekly spore testing.

Immunization for hepatitis B was reported by 87.7 per cent of dentists in the 1993 survey, up from 45.7 per cent in 1987 (**Table III**). This increase in HBV vaccination is consistent with the study of Gruninger et al,³⁹ which reported on the results of the Health Screening Program at four ADA annual ses-



sions. These surveys indicate that vaccination rates increased from 57.8 per cent in 1987 to 71.6 per cent in 1990.

The highest acceptance rate was found in the United Kingdom,⁴⁰ where vaccination against HBV has been provided to dental personnel free-of-cost since 1982. In the U.K., 94 per cent of general dentists and 95 per cent of auxiliary staff had been immunized in 1993. Significant increases in acceptance to hepatitis B vaccine were also reported.

Natural immunity to HBV in dentists, as determined by the presence of antibodies prior to immunization, has been shown to range from between 3.2 and 7.9 per cent in North America.^{2,3,41,42} Because of this low rate of natural immunity, ADA believes that pre-screening for HBV antibodies is neither strongly recommended nor cost effective. In our 1993 survey, 67 per cent of respondents had a blood test before HBV vaccination.

Post-vaccination blood screening is probably of more importance in personal infection control than pre-screening. The HBV vaccine is shown to be 86 per cent effective, or less, in producing adequate levels of antibodies in a dental population ranging in age from 23 to 75 years.⁴² In addition, the vaccine failure rate increased to 21.5 per cent in dentists older than 40, and to 25.4 per cent in dentists aged 50 to 75. These figures indicate a need for post-vaccination testing for hepatitis B antibodies to ensure that adequate protection has been achieved. However, Molinari¹⁴ warns that the results are sometimes difficult to interpret, especially if the testing is done more than six months after the primary series of vaccinations are completed. Verrusio²⁸ found that post-vaccination screening for HBV immunity was reported by 25 and 32 per cent of general dentists in 1986 and 1988, respectively. In our survey, 67 per cent of dentists reported post-vaccination screening in 1993.

Another consideration for post-vaccination HBV antibody screening is the duration of protective serum antibody levels. The British

Dental Association (BDA) guidelines⁴³ advise that sufficient levels of antibody persist for three to five years, after which a booster injection must be given for continued protection. In Germany, the post-vaccination serum antibody level determines the time interval between initial immunization and the follow-up test for the level of antibodies.¹⁷ Those with lower levels are advised to return for re-testing after two to three years. Perhaps a more specific regimen should be encouraged in Canada to address this consideration.

In our surveys, the number of dentists who had sustained one to five percutaneous injuries in the previous six months decreased by 45 per cent between 1987 and 1993. The annual injury rate of dentists in the United States was shown to be 3.21 injuries, a figure that also declined significantly between 1987 and 1992.⁴⁴ These studies show that, in the face of a compelling stimulus such as the AIDS epidemic, it is possible to alter dentists' behavior significantly through education and increased awareness.

Several authors^{37,45-47} support the low risk of transmission associated with needlestick exposures from HIV infected patients. On the other hand, Gerberding⁴⁸ reported that after an accidental inoculation with a needle containing HIV- and HBV-infected blood, only HBV infection was transmitted. He concluded that the difference in the average numbers of circulating HIV and HBV infectious units suggests that HBV can easily be transmitted through needlesticks, while HIV cannot be transmitted in the dental operatory. Whether the risk of HBV and HIV transmission is high or low, it should always be minimized by careful practice, however, including the use of a safety-device for recapping needles, and the avoidance of manual needle recapping.

As indicated in Table IV, dentists require an increased understanding of hepatitis B serology to adequately interpret the results of their own or their patients' blood tests, and subsequently ensure treatment in a safe environment. In

1993, less than 25 per cent of 719 respondents correctly interpreted the results of a hypothetical hepatitis B blood test, which indicated a patient who was currently infected. The majority (62.7 per cent) were not sure of the interpretation. Further education to increase the awareness of hepatitis B viral serology among practising dentists seems warranted.

Conclusions

Due to the low response rate to all four surveys, as well as the volunteer nature of recruitment, the extrapolation of these results to the total dental population of B.C. should be done with caution. The results may not give a completely accurate indication of compliance to infection control recommendations by the total population. Nevertheless, among this cohort of dentists there are clear indications that compliance rates have improved significantly over a six-year period, and that adherence to infection control practises still requires improvement. The goal for each dental office should be to achieve total compliance, thereby keeping patient-to-patient, patient-to-dentist and dentist-to-patient transmission at a minimum. This can be accomplished by the continued use of appropriate vaccines, barrier devices, sharps protection, and strict attention to current recommendations on the sterilization/disinfection of instruments, surfaces and materials. In addition to good biologic science, the increasing expectations of the public with regard to their personal safety justify total compliance to recommended infection control procedures in dental practice. ■

Acknowledgments: These surveys were funded, in part, by grants from the College of Dental Surgeons of British Columbia and the Vancouver Hospital and Health Sciences Centre — UBC site.

Dr. Gibson is an assistant professor and head of the division of hospital dentistry, faculty of dentistry, University of British Columbia.

Dr. Mathias is an associate professor and acting head of the department of health care and epidemiology, faculty of medicine, University of British Columbia.



Dr. Epstein is a clinical professor in the faculty of dentistry, University of British Columbia, and head, division of oral medicine and clinical dentistry at Vancouver Hospital and Health Sciences Centre.

Reprint requests to: Dr. G.B. Gibson, Department of Oral Medical and Surgical Sciences, Faculty of Dentistry, University of British Columbia, 2199 Westbrook Mall, Vancouver, BC V6T 1Z3.

References

- Canadian Dental Association. Recommendations for infection control procedures. *J Can Dent Assoc* 55:April supplement, 1989.
- Noble, M.A., Gibson, G.B., Mathias, R.G. et al. Hepatitis B and HIV infections in dental professionals: effectiveness of infection control procedures. *J Can Dent Assoc* 57:55-58, 1991.
- Roscoe, D.L., Gibson, G.B., Noble, M.A. et al. Hepatitis and HIV: Prevalence of infection and changing attitudes toward infection control procedures in British Columbia. *J Can Dent Assoc* 57:863-870, 1991.
- Hardie, J. Infection control survey — 1988. *J Can Dent Assoc* 55:299-301, 1989.
- Epstein, J.B., Rathee, N.N. and Mathias, R.G. Infection control: survey of dental health care workers. *Oral Health* 79:53-56, 1989.
- Goebel, W.M. Reliability of the medical history in identifying patients likely to place dentists at an increased hepatitis risk. *JADA* 98:907-913, 1979.
- Tullman, M.J. and Boozer, C.H. Past infection with hepatitis B virus in patients at a dental school. *JADA* 97:477-478, 1978.
- Epstein, J.B., Mathias, R.G. and Bridger, D.V. Survey of knowledge of infectious disease and infection control practices of dental specialists. *J Can Dent Assoc* 61:35-44, 1995.
- Hardie, J. Problems associated with providing dental care to patients with HIV infection and AIDS patients. *Oral Surg Oral Med Oral Pathol* 73:231-235, 1992.
- Wilson, N.H., Burke, F.J. and Cheung, S.W. Factors associated with dentists' willingness to treat high-risk patients. *Brit Dent J* 178:145-148, 1995.
- Rydman, R.J., Yale, S.H., Mullner, R.M. et al. Preventive control of AIDS by the dental profession: a survey of practices in a large urban area. *J Pub Health Dent* 50:7-12, 1990.
- Gerbert, B. AIDS and infection control in dental practice: dentists' attitudes, knowledge and behavior. *JADA* 114:311-314, 1987.
- Gerbert, B., Maguire, B., Badner, V. et al. Changing dentists' knowledge, attitudes and behaviors relating to AIDS: a controlled educational intervention. *JADA* 116:851-854, 1988.
- Molinari, J.A., Merchant, V.A. and Gleason, M.J. Controversies in infection control. *Dent Clinic N A* 34:55-69, 1990.
- Pippin, D.J., Verderame, R.A. and Weber, K.K. Efficacy of face masks in preventing inhalation of airborne contaminants. *J Oral Maxillofac Surg* 45:319-323, 1987.
- Reingold, A.L., Kane, M.A. and Hightower, A.W. Failure of gloves and other protective devices to prevent transmission of hepatitis B virus to oral surgeons. *JAMA* 259:2558-2560, 1988.
- Wood, P. Controversies in cross-infection control. *Brit Dent J* 174:249-251, 1993.
- Baumann, M.A. Protective gloves. *Int Dent J* 42:170-180, 1992.
- Gonzalez, E. and Naleway, C. Assessment of the effectiveness of glove use as a barrier technique in the dental operatory. *JADA* 117:467-469, 1988.
- Cochran, M.A., Miller, C.H. and Sheldrake, M.A. The efficacy of the rubber dam as a barrier to the spread of micro-organisms during dental treatment. *JADA* 119:141-144, 1989.
- Horowitz, L.G. and Lipkowitz, R.D. Survey of AIDS, fear and infection control: attitudes affecting management decisions. *Clin Prev Dent* 14:31-34, 1992.
- Runnels, R. Countering the concerns: How to reinforce dental practice safety. *JADA* 124:65-73, 1993.
- Grace, E.G., Cohen, L.A. and Ward, M.A. Patients' perceptions related to the use of infection control procedures. *Clin Prevent Dent* 13:30-33, 1991.
- Horowitz, L. and Kehoe, L. Fear and AIDS: Educating the public about dental office infection control procedures. *Gen Dent* 41:385-390, 1993.
- Burke, F.J. and Wilson, N.H. Glove use by dentists in England and Wales: Results of a two-year follow-up survey. *Brit Dent J* 176:337-341, 1994.
- Burke, F.T. Use of non-sterile gloves in clinical practice. *J Dent* 18:79-89, 1990.
- Lloyd, L., Burke, F.J. and Cheung, S.W. Handpiece asepsis: A survey of the attitudes of dental practitioners. *Brit Dent J* 178:23-27, 1995.
- Verrusio, A.C., Neidle, E.A., Kent, K.D. et al. The dentist and infectious diseases: a national survey of attitudes and behavior. *JADA* 118:553-562, 1989.
- Lewis, D.L. and Boe, R.K. Cross-infection risks associated with current procedures for using high-speed dental handpieces. *J Clin Microbiol* 30:401-406, 1992.
- Hardie, J. Handpiece sterilization — the debate continues. *J Can Dent Assoc* 59:355-362, 1993.
- Mills, S.E., Keuhne, J.C. and Bradley, D.V. Bacteriological analysis of high speed handpiece turbines. *JADA* 124:59-62, 1993.
- Harrison, B. and Nicosia, J. Five states move quickly on handpiece sterilization. *JADA* 123:119-120, 1992.
- Miller, M.C. Infection control considerations when designing and equipping a dental office. *J Can Dent Assoc* 60:196-201, 1994.
- Centers for Disease Control and Prevention. Recommended infection control practices for dentistry, 1993. *MMWR* 41:1-12, 1993.
- Councils on dental materials and instruments and equipment; dental practice; dental research; and dental therapeutics. Infection control recommendations for the dental office and dental laboratory. *JADA* (supplement) 123:1-8, 1992.
- Miller, C.H. Cleaning, sterilization and disinfection: basics of microbial killing for infection control. *JADA* 124:48-56, 1993.
- Hastreiter, R.J., Molinari, J.A. and Falken, M.C. et al. Effectiveness of dental office instrument sterilization procedures. *JADA* 122:51-56, 1991.
- McErlane, B., Rosebush, W.J. and Waterfield, J.D. Assessment of the effectiveness of dental sterilizers using biologic monitors. *J Can Dent Assoc* 58:481-483, 1992.
- Gruninger, S.E., Siew, C. et al. HIV type 1 infection among dentists. *JADA* 123:57-64, 1992.
- Scully, C., Griffiths, M., Levers, H. et al. The control of crossinfection in U.K. clinical dentistry in the 1990s: immunization against Hepatitis B. *Brit Dent J* 174:29-31, 1993.
- Epstein, J.B., Buchner, B.K., and Bouchard, S. Hepatitis B and Canadian dental professionals. *J Can Dent Assoc* 50:555-559, 1984.
- Siew, C., Gruninger, S.E. et al. Survey of hepatitis B exposure and vaccination in volunteer dentists. *JADA* 114:457-459, 1987.
- The control of cross-infection in dentistry. *Guidelines of the British Dental Association advisory service*. July 1991.
- Siew, C., Chang, S., Gruninger, S.E. et al. Self-reported percutaneous injuries in dentists: implications for HBV, HIV transmission risk. *JADA* 123:37-44, 1992.
- Scully, C. and Porter, S. The level of risk of transmission of human immunodeficiency virus between patients and dental staff. *Brit Dent J* 170:97-100, 1991.
- Klein, R.S., Phelan, J.A., Freeman, K. et al. Low occupational risk of human immunodeficiency virus infection among dental professionals. *N Engl J Med* 318:86-90, 1988.
- Beekman, S.E. and Henderson, D.K. Managing occupational risks in the dental office: HIV and the dental professional. *JADA* 125:847-852, 1994.
- Gerberding, J.L., Hopewell, P.C., Kaminsky, L.S. et al. Transmission of hepatitis B with transmission of AIDS by accidental needlestick. *N Engl J Med* 312:56-57, 1985.



CANADIAN DENTAL ASSOCIATION

NEW DIRECTIONS



SEMINAR SERIES

THE CHANGING FACE OF DENTISTRY

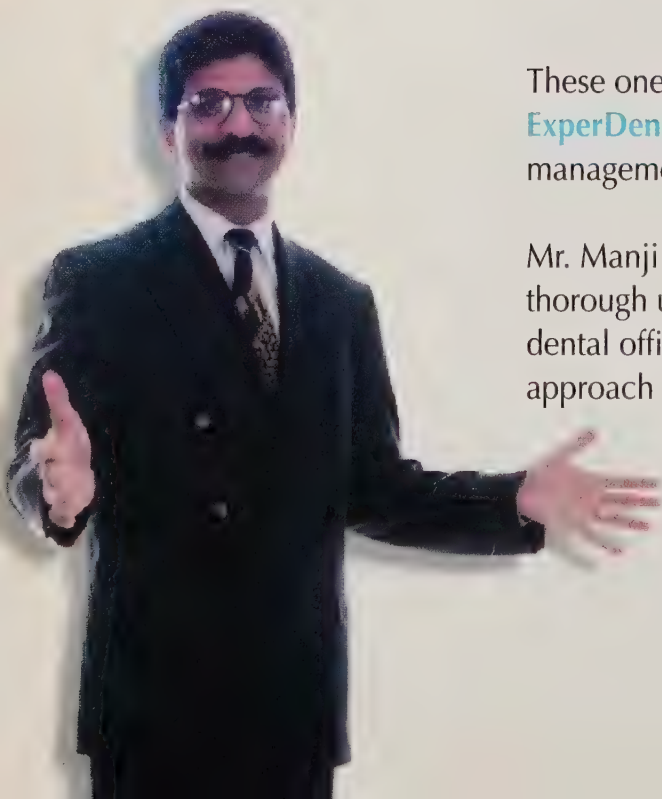
- A reduced incidence of dental disease
- An increase in the number of practising dentists
- Declining disposable incomes
- Competitive pressures on employers to reduce employee benefits
- The changing relationship between employees and employers
- Changing dental technologies
- An aging population...

To help your practice prepare for **New Directions** in dentistry, the **Canadian Dental Association** presents

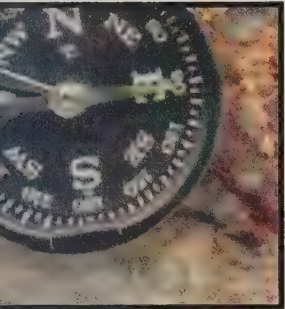


These one-day seminars will be led by Mr. Imtiaz Manji, president of **ExperDent Consultants** and one of Canada's foremost practice management experts.

Mr. Manji combines business sense, a keen eye for economic trends and a thorough understanding of the dental profession. In his work with over 1,500 dental offices across North America, Mr. Manji has developed a pragmatic approach to dental management that emphasizes workable solutions and leads dentists toward improved financial, practice and personal success.



Attend these seminars and learn how to prepare your practice
for **New Directions** in dentistry:



REACHING OUT

Marketing Strategies to Bring in New Patients... and Keep Them!

As dentistry becomes a service largely paid for by consumers, maintaining income levels and patient flow will increasingly depend on the marketing activities of individual practitioners.

It comes as a pleasant surprise to many dentists that they don't have to become salespeople to market their practices effectively. In fact, dental marketing has everything to do with communicating – and good communications is a worthy goal for every practice.

If you want to attract patients and keep them in your practice, regardless of insurance, this seminar is for you.



SURVIVING & THRIVING IN THE '90s

Re-engineering Your Practice and Financial Plan for Success!

Along with the many challenges facing dentists today comes a wealth of opportunities. This seminar shows you how to recognize these advantages and re-engineer your practice to exploit them. Learn strategies for patient care, transition management, financial planning and team leadership that will help you survive – and thrive – in the '90s. (Some of the material discussed here is covered in greater detail in the Reaching Out and Bottom Line seminars.)

If you have questions about the right direction for your practice, this seminar has the answers you are looking for.

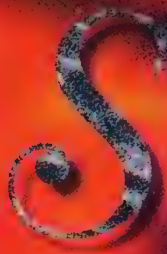


THE BOTTOM LINE

How to Get Ahead and Stay Ahead in Competitive Times!

Competition in dentistry is not the practice down the block. It is the thousands of other companies, products and services that consume your patients' discretionary income – income that is needed to pay for dental treatments. Tough times mean that patients have to make tough choices that directly affect your practice. Learn how to manage your practice to protect your bottom line, maximize practice value and achieve unprecedented success during economic squeezes.

This seminar provides a wealth of practical advice and techniques to anyone concerned about declining incomes, rising costs and limited resources. Your lawyer, accountant or other professional advisors are welcome to attend with you.



SCHEDULE AND REGISTRATION

SEMINAR	LOCATION	DATE
Surviving and Thriving	Winnipeg	May 5
Surviving and Thriving	Saskatoon	May 12
Reaching Out	Vancouver	June 9*
Surviving and Thriving	London	June 23
The Bottom Line	Victoria	October 13
The Bottom Line	Toronto	November 10
Reaching Out	Halifax	November 17
The Bottom Line	Fredericton	November 18
The Bottom Line	Ottawa	December 1
Reaching Out	Calgary	January 19, 1996
The Bottom Line	Edmonton	January 20
Reaching Out	Sudbury	January 26
Reaching Out	Windsor	February 2
Reaching Out	Toronto	February 9
Reaching Out	Montreal	February 16**
The Bottom Line	Saskatoon	March 1
The Bottom Line	Winnipeg	March 29

Agenda 8:30: Sign-in • 9:00: Begin • 12:15: Break • 1:15: Resume • 4:00: Close

SEMINAR: _____

LOCATION: _____

DENTIST/ADVISOR \$160 (Lunch included)

TEAM MEMBER/SPOUSE attending with dentist
\$80 (Lunch included)

SUBTOTAL

GST 7% OF SUBTOTAL (#R106845209)

TOTAL

Number Total

	\$
	\$
	\$
	\$

Pre-registration is required. There will be no on-site registrations. Register early since enrollment is limited.

Name: _____ **CDA Membership #:** _____

Street: _____ **City/Town** _____ **Prov.** _____

Telephone Office: _____ **Residence:** _____ **Postal Code** _____

A tax receipt for the above registration fees will be issued to: _____

☐ Cheque made payable to the Canadian Dental Association is enclosed. (No post-dated cheques) ☐ Visa ☐ MasterCard

Signature: _____ **Credit Card #:** _____ **Expiry Date:** _____

Mail or fax registration form and payment to: **CDA Seminars '95**, Membership Services,

Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6

Register today! Call CDA toll-free 1-800-267-6354 or fax 1-613-523-7736.

Confirmation of your enrollment will be received by mail. Cancellation policy: Full refund 21 days prior to seminar.

*CE Credits will apply subject to Provincial approvals pending.

* The Annual General Meeting of the College of Dental Surgeons of British Columbia will be held during a break in this seminar. While you attend the AGM, a marketing session is planned for team members. Please contact the CDA at 1-800-267-6354 for the special form needed to register for this seminar.

** Seminar will be given in English only.

CDA member dentists
receive a \$75 credit towards
the purchase of
Taking Care of Business
Volumes 1, 2 or 3

INFECTION CONTROL



Hepatitis C: What a Dentist Should Know

Karl Weiss, MD, CSPQ, FRCP(C)

ABSTRACT

During the last two decades, the existence of a blood-borne virus responsible for non-A, non-B hepatitis was suspected but not identified. In the United States, an estimated 170,000 cases of post-transfusion hepatitis, many of which became chronic, were attributed to the unknown virus. Recently, however, the virus has been identified and more has been learned about the disease.

This review will focus on recent advances regarding the virus and its implications for dental practice.

SOMMAIRE

Au cours des deux dernières décennies, on soupçonnait l'existence d'un virus à diffusion hématogène responsable de l'hépatite non A, non B, mais on ne réussissait pas à l'identifier. Aux États-Unis, on a estimé à 170 000 le nombre de cas d'hépatite post-transfusionnelle attribués à ce virus inconnu; bon nombre sont devenus chroniques. Récemment, cependant, on est parvenu à identifier le virus et on en a appris davantage sur cette maladie.

Dans cet article, on parle des derniers progrès touchant ce virus et de ses conséquences dans l'exercice de la dentisterie.

The Hepatitis C Virus

In 1989, for the first time, Kuo et al¹ cloned a portion of the viral genome causing post-transfusion hepatitis. This virus was called hepatitis C virus or HCV. It is a single-stranded RNA virus with a lipid envelope, and shares many physico-chemical similarities with the *Flavivirus* family. The virus structure is quite simple and it contains a 5' non-coding region, a core (C), an envelope coding region (E), and five nonstructural (NS) regions (Fig. 1).

Diagnosis

The diagnosis of hepatitis C is always made by serological testing. There are currently three types of tests on the market. Shortly after HCV was discovered, ELISA was developed as a first-line screening test, mainly for blood banking purposes. The first-generation of ELISA test was not very sensitive, because it only detected antibodies against one peptide (c100) situated in the non-structural region of the virus. Better results are possible with the second-generation ELISA test, which is made with peptides from both the structural and nonstructural regions of the virus (c100-3, c33, c22), and is 90 per cent sensitive and 95 per cent specific. However, it should be remembered that ELISA test results

can be falsely negative during an acute infection, and that it can take up to 12 weeks after the onset of infection to obtain a positive test.

Every positive ELISA test must be confirmed by a more sophisticated but tedious second-line method called recombinant immunoblot assay (RIBA). In this test, the patient's serum is put in contact with recombinant viral peptides that are immobilized on a nitrocellulose membrane. If antibodies are present, antibody-antigen complexes can be detected using an immunoenzymatic technique.

The third method of detecting HCV uses a polymerase chain reaction (PCR) test to amplify the stable non-coding 5' region of the virus. Although this technique is very sensitive and specific, it is chiefly used in a research context. PCR detects viremia instead of antibodies. It can be particularly useful in certain situations, such as determining the HCV status of babies born to infected mothers, or assessing a patient's response to treatment.

Epidemiology

The prevalence of HCV in the general population has been extensively studied in several countries. In Japan, Nishioka found that 1.3 per cent of the population was anti-HCV positive. Similarly, in a

JOURNAL

June/
Juin
1995
Vol. 61
No. 6

Table 1

What To Do In Case Of Sharp Object Injury

1. Stop working immediately. Don't panic. Remove your gloves.
2. Let the blood flow, press firmly if necessary, clean the injury thoroughly with a disinfectant.
3. Have a basic anti-HCV serology performed to prove that you were anti-HCV negative when the accident occurred. (It could be very useful if you have disability insurance.)
4. Consult your physician immediately. Liver function tests and HCV serology should be performed at zero, three and six months.
5. As sexual transmission is rare but can occur, you or your partner should use condoms for the following six months.
6. Testing, preventive medication and counselling should be done by your physician for hepatitis B and HIV (not discussed here).
7. You should already be immunized against hepatitis B; if not, do it as soon as possible.

study evaluating the prevalence of hepatitis C antibodies in volunteer blood donors in the New York area, Stevens et al² found that 1.4 per cent were anti-HCV positive.

In the majority of HCV patients, a risk factor can be detected with a thorough epidemiological survey. Blood transfusion recipients prior to 1991, especially hemophiliacs, intravenous drug abusers and patients undergoing hemodialysis are all at higher risk for hepatitis C.³ Transmission through other, unusual, routes such as tattooing,⁴ ritual ceremonies⁵ and institutionalization in psychiatric hospitals has also been described.

An organ transplanted from an HCV-infected patient can infect the recipient,⁶ although this does not always occur. For example, none of the six recipients of kidneys from four HCV RNA-positive donors became infected.⁷

Sexual transmission may also occur. The risk of transmission is proportional to the duration of the relationship. However, this mode of contamination does not seem to be very efficient. For example, in a Dutch study, none of the 50 heterosexual partners of infected individuals were anti-HCV positive, and HCV-RNA was not detected.⁸ Heterosexual spouses of anti-HCV positive hemophiliacs have a low prevalence of HCV antibodies⁹ and sometimes none at all.⁸

Co-infection with the HIV virus tends to raise the likelihood of HCV transmission.¹⁰ The reason for this is still not well understood, but it could be related to the presence of other risk factors. Vertical transmission from mother to child has also been reported. A Japanese study showed a six per cent transmission rate. This was always associated with the patient being

positive for HCV-RNA and detected by a PCR method.¹¹

Health-care professionals seem to be at increased risk of contracting the disease through sharp-object related injury (**Table 1**), and represent two per cent of acute HCV patients.¹² This is higher than the rate of infection found in the general population.

Nevertheless, in a study evaluating the risk of acquiring the virus via a needle-stick accident, Hernandez et al¹³ found that none of the 81 hospital personnel with occupational exposure to documented sources of HCV became anti-HCV positive. In fact, the study suggested a low efficacy of HCV transmission in this setting. Another study done in the U.K.¹⁴ failed to show a high seroprevalence of HCV antibodies in health-care workers exposed to patients with a high prevalence of HCV, while Kiyosawa et al¹⁵ reported that only three of the 110 health-care workers (2.7 per cent) implicated in percutaneous needle injuries with HCV-infected patients subsequently became anti-HCV positive. Similarly, at Johns Hopkins University Hospital, the seroprevalence of HCV antibodies was only 0.7 per cent (7/943) in health-care workers.¹⁶

However, there are well documented cases where viral transmission has occurred in conjunction with different medical procedures, including hemodialysis and surgery,¹⁷ and one Japanese author reported a 10 per cent (7/68) risk of HCV transmission following a needle-stick accident. This is a much higher level of risk than was previously reported.¹⁸

In a study that evaluated dentists practising in the New York

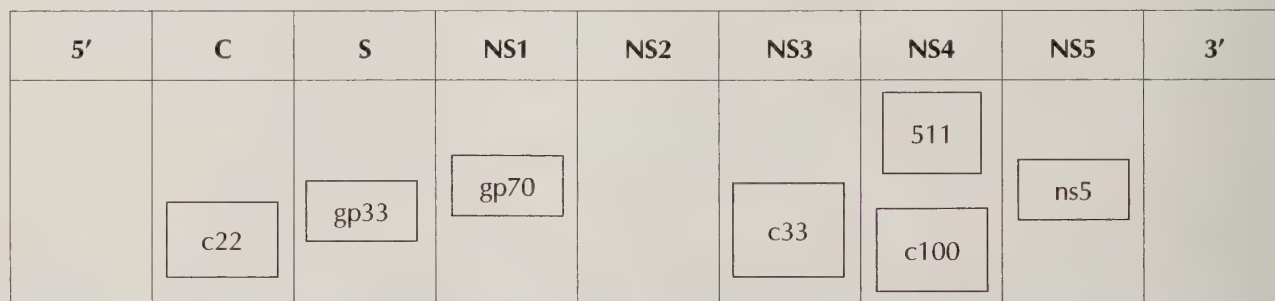


Fig. 1: Genomic structure of Hepatitis C. The entire genome is approximately 10,000 bases coding for 3,000 amino acids. (C): nucleocapsid. (S): envelope sequence. (NS): nonstructural regions.



area, Klein et al¹⁹ found an HCV prevalence of 1.75 per cent (8/456), versus a prevalence of just 0.14 per cent in a control group. The infection ratio was even higher in a subgroup of oral surgeons (4/43, or 9.3 per cent) relative to other dentists (4/413 or 0.97 per cent). Seropositive dentists claimed to have treated more intravenous drug users in the month preceding the study.

In 1989, an Australian man was infected with HCV after receiving a human bite, suggesting that HCV may be transmitted through saliva.²⁰ Several studies have detected HCV in saliva,^{21,22} and primate studies have provided some experimental evidence to show that HCV-containing saliva may transmit the virus.

These findings show that, relative to the general population, dentists are probably at increased risk of contracting HCV, and should therefore strictly adhere to the universal precautions pertaining to biological fluids.²³

Some patients are HCV positive despite having no obvious risk factors, which suggests that there may be other infectious routes in addition to the classical pathways of infection. The proportion of patients belonging to this category varies considerably depending on study population. This discrepancy could represent unapparent parental transmission, especially in patients originating from countries whose medical facilities do not meet North American standards.²⁴

Prophylaxis and Treatment

A few years ago, it was suggested that human gamma-globulins could decrease the risk of acquiring HCV following a percutaneous accident with a sharp object. According to this somewhat controversial theory, because gamma-globulins are prepared from a pool of donors, someone with antibodies would eventually confer a passive immunity to the gamma-globulin recipient.²⁵

Today, however, the Canadian Red Cross routinely screens blood donors for anti-HCV antibodies and positive donations are discarded. There is no longer any value in administering human

gamma-globulins prepared from this source to needle-stick victims, as it is unlikely to prevent an infection. Furthermore, there is no clear evidence that the antibodies involved are protective against HCV infection.

The biggest problem with HCV is that the infection tends to become chronic, and eventually leads to permanent liver damage. Longitudinal studies have found that 62 per cent of HCV-infected patients will be chronic carriers, and 20 per cent will develop either chronic hepatitis, or even cirrhosis.²⁶ Moreover, new data suggest a strong association between liver cancer (hepatocellular carcinoma) and hepatitis C.²⁷ In a study evaluating 1,930 patients with hepatoma, 26 per cent had anti-HCV antibodies alone and 21 per cent had concurrent hepatitis B markers, thus potentially implicating hepatitis C in 47 per cent of the cases.²⁸

Alpha-interferon given over 24 weeks could be useful for selected patients. In certain settings, liver enzymes have returned to a normal level during treatment, but the disease activity recurs once the medication has been discontinued.²⁹ In addition, alpha-interferon is associated with many serious side effects, which may be difficult for the patient to endure. There is still a great deal of debate in the medical literature on the treatment of hepatitis C, which is not dealt with in detail in this review.

No HCV vaccine is available at present, and none will be put on the market in the near future, although an immunization trial with glycosylated E1 and E2 complexes may have conferred a certain protection to chimpanzees.³⁰

Conclusion

Hepatitis C virus has recently been characterized. Although there is still a great deal to learn about the disease, it is clear that the infection may be transmitted by blood or possibly by saliva as a result of a sharp object injury. This has a certain implication for the dental practice, and requires dentists to place an even bigger emphasis on universal precautions when caring for patients. ■

Dr. Weiss is a staff member of the faculty of medicine, University of Montreal.

Reprint requests to: Dr. K. Weiss, Department of Infectious Diseases and Medical Microbiology, Maisonneuve-Rosemont Hospital, Montreal, Que. H1T 2M4

References

1. Kuo, G., Choo, Q.L., Alter, H.J. et al. An assay for circulating antibodies to a major etiologic virus of human non-A non-B hepatitis. *Science* 244:362-364, 1989.
2. Stevens, C., Taylor, P., Pindych, J. et al. Epidemiology of hepatitis C virus. *JAMA* 263:49-53, 1990.
3. Chaudhary, R.K. and Mo, T. Antibody to hepatitis C virus in risk groups in Canada. *Can J Infect Dis* 1:27-29, 1992.
4. Ko, Y., Ho, M.S., Chiang, T.A. et al. Tattooing as a risk of hepatitis C virus infection. *J Med Virol* 38:288-291, 1992.
5. Atrah, H.I., Ala, F.A. and Gough, D. Blood exchanged in ritual ceremonies as a possible route for infection with hepatitis C virus. *J Clin Pathol* 47:87, 1994.
6. Pereira, B., Milford, E.L., Kirkman, R.L. et al. Transmission of hepatitis C virus by organ transplantation. *N Engl J Med* 325:454-460, 1991.
7. Vicenti, F., Lake, J., Wright, T. et al. Non transmission of hepatitis C from cadaver kidney donors to transplant recipients. *Transplantation* 55:674-675, 1993.
8. Bresters, D., Mauser-Bunschoten, E., Reesink, H.W. et al. Sexual transmission of hepatitis C virus. *Lancet* 342:210-211, 1993.
9. Brackmann, S.A., Gerritzen, A., Oldenburg, J. et al. Search for intrafamilial transmission of hepatitis C virus in hemophilia patients. *Blood* 81:1077-1082, 1993.
10. Eyster, M., Alter, H., Aledort, L. et al. Heterosexual co-transmission of hepatitis C virus and human immunodeficiency virus. *Ann Intern Med* 115:764-768, 1991.
11. Ohto, H., Terazawa, S., Sasaki, N. et al. Transmission of hepatitis C from mothers to infants. *N Eng J Med* 330:744-750, 1994.
12. Schiff, E.R. Hepatitis C among health care providers — risk factors and possible prophylaxis. *Hepatology* 16:1300-1301, 1992.
13. Hernandez, M.E., Bruguera, M., Puyuelo, T. et al. Risk of needle-stick injuries in the transmission of hepatitis C virus in hospital personnel. *J Hepatol* 16:56-58, 1992.
14. Zuckerman, J., Clewley, G., Griffiths, P. et al. Prevalence of Hepatitis C antibodies in clinical health-care workers. *Lancet* 343:1618-1619, 1994.



15. Kiyosawa, K., Sodeyama, T., Tanaka, E. et al. Hepatitis C in hospital employees with needlestick injuries. *Ann Intern Med* 115:367-369, 1991.
16. Thomas, D.L., Factor, S.H., Kelen, A. et al. Viral hepatitis in health care personnel at the Johns Hopkins Hospital: the seroprevalence of and risk factors for hepatitis B virus and hepatitis C virus infection. *Arch Intern Med* 153:1705-1712, 1993.
17. Vaglia, A., Nicolin, R., Puro, V. et al. Needlestick hepatitis C virus seroconversion in a surgeon. *Lancet* 336:1315-1316, 1990.
18. Mitsui, T., Iwano, K., Masuko, K. et al. Hepatitis C virus infection in medical personnel after needlestick accident. *Hepatology* 16:1109-1114, 1992.
19. Klein, R., Freeman, K., Taylor, P. et al. Occupational risk for hepatitis C virus infection among New York City dentists. *Lancet* 338:1539-1542, 1991.
20. Dusheiko, G., Smith, M. and Scheuer, P.J. Hepatitis C transmitted by human bite. *Lancet* 336:503-504, 1990.
21. Komiyama, K., Moro, I., Matsuda, Y. et al. HCV in saliva of chronic hepatitis patients having dental treatment. *Lancet* 338:572, 1991.
22. Abe, K and Inchauspe, G. Transmission of hepatitis C by saliva. *Lancet* 337:248, 1990.
23. Epstein, J. and Sherlock, C.H. Hepatitis C: Rapid progress in medicine and implications for dentistry. *J Can Dent Assoc* 60:323-329, 1994.
24. Cuthbert, J.A. Hepatitis C: progress and problems. *Clin Micro Rev* 7:505-532, 1994.
25. Gerberding, J.L. and Henderson, D.K. Management of occupational exposures to bloodborne pathogens: hepatitis B virus, hepatitis C virus and human immunodeficiency virus. *Clin Infect Dis* 14:1179-1185, 1992.
26. Alter, M., Margolis, H., Krawczynski, K. et al. The natural history of community-acquired hepatitis C in the United States. *N Engl J Med* 327:1899-1905, 1992.
27. Lee, S., Han, C.J. and Kim, C.Y. Predominant etiologic association of hepatitis C virus with hepatocellular carcinoma compared with hepatitis B virus in elderly patients in a hepatitis B-endemic area. *Cancer* 72:2564-2567, 1993.
28. Resnick, R.H. and Koff, R. Hepatitis C-related hepatocellular carcinoma. Prevalence and significance. *Arch Intern Med* 153:1672-1677, 1993.
29. Davis, G., Balart, L., Schiff, E. et al. Treatment of chronic hepatitis C with recombinant interferon alpha. *N Engl J Med* 321:1501-1506, 1989.
30. Choo, Q.-L., Kuo, G., Ralston, R. et al. Vaccination of chimpanzees against infection by the hepatitis C virus. *Proc Natl Acad Sci USA* 91:1294-1298, 1994.

21ST CENTURY CERAMICS

OCTOBER 20, 21, 22, 1995
VANCOUVER, CANADA

WORLD CLASS SPEAKERS

Mr. Willi Geller • Mr. Claude Sieber • Dr. Fritz Kopp • Mr. Klaus Mütterthies
Dr. Frank Spear • Dr. Gerard Chiche • Dr. Mauro Fradeani • Dr. David Garber
HOSTED BY THE VANCOUVER SEMINAR FOR DENTISTRY

Please send cheque to
**THE VANCOUVER
SEMINAR FOR
DENTISTRY**
SUITE 280,
7580 RIVER ROAD
RICHMOND, BC
CANADA V6X 1X6
TELEPHONE:
1 800 669-0338
FAX:
604 278-6864

REGISTRATION FORM

.....

- ☐ Please send me an Information Package
☐ Please Register me (Tuition: \$636.65 CDN - includes GST)
☐ DENTIST ☐ TECHNICIAN

Name: _____
Address: _____
City: _____ Prov./State: _____ Postal/Zip Code: _____
Visa No: _____ Mastercard No: _____
Expiry Date: _____ Signature: _____

CDA Access Ads

CDA ACCESS ADS offer guaranteed access to Canada's largest audience of dentists. To place your ad, call **Neil McGillivray** toll-free across the country at **(800) 661-5004**. In the Toronto calling area, please dial **(905) 278-6700**.

Replying to a CDA Access Box Number? Simply write to:
CDA Access Box ____,
1382 Hurontario St.,
Mississauga, Ont. L5G 3H4.
Or you may fax your reply to (905) 278-4850, noting the appropriate box number.

Offices & Practices

BRITISH COLUMBIA - Nanaimo: Exceptional opportunity/location for sale - First-class dental office in busy major shopping centre, five operatories, high new patient flow, great history and even better future expected. Located in Nanaimo, B.C., one of the fastest growing cities in Canada, with a great recreational environment on the ocean. Call (604) 756-1200 day or (604) 756-1082 evenings. (04/06)

BRITISH COLUMBIA - Trail: Established family practice in stable industrial economy with superb recreational opportunities. Prime location. Low overhead. Modern equipment. Owner retiring. Phone (604) 362-9426 (evenings). (06/13)

BRITISH COLUMBIA - Vancouver Region: Exciting practice purchase opportunity available near Vancouver. Well-established, health-centered general practice. Team will stay on with new owner. Current owner willing to work with buyer to ensure a smooth and successful transition. Please respond with curriculum vitae and written vision of your preferred future to CDA ACCESS Box # 2671. (05/06)

BRITISH COLUMBIA - Victoria: The charm, the people, the weather and

the economy. This computerized practice with panorex and all modern equipment grosses over \$360,000, and growing, with a solo practitioner, four days a week. The owner is going back to school. Great opportunity, will not last. Reply to CDA ACCESS Box # 2664. (04/06)

BRITISH COLUMBIA - Tumbler Ridge: Practice for sale. Excellent opportunity for a young dentist. General practice with five operatories in friendly single dentist community. Low overhead with an excellent flow of patients, all of whom have superior dental benefits. One hour drive from Dawson Creek. Call (604) 242-3407 (leave a message). (05/13)

**BRITISH COLUMBIA
East Vancouver**
For sale, established family/general practice. Excellent patient flow. Eight-year-old practice with three operatories. \$400,000 gross with low overhead. Contact:
Bing C. Wong & Associates Ent. Ltd.
(604) 682-7561. (12/06)

**FOR INFORMATION ON
B.C. DENTAL PRACTICES
FOR SALE CALL**
Health Pro Realty Ltd.
(604) 538-7838
Suite #239 - 1959 152nd Street,
White Rock, B.C. V4A 9E3

BRITISH COLUMBIA - Vancouver: Established preventative practice in one of the best areas in the city. Providing the new owner with an opportunity to practice excellence in dentistry and a huge growth potential to expand in all disciplines of dentistry. State-of-the-art equipment, pan, Densply Perspective intra-oral

camera, three operatories, F/T hygienist, four days a week, friendly and team oriented staff. \$400,000. Please reply to CDA ACCESS Box # 2676. (06/06)

SOUTH RICHMOND - B.C. FOR SALE

Attractive Neighborhood practice. Established over 30 years. Four operatories in free-standing 1,200 sq. ft. bungalow. Gross \$500,000. Lots of potential for growth! Extended transition desired. Contact **Jim Clark (604) 263-2823 RE/MAX Business Brokerage Division.** (06/06)

ALBERTA Edmonton Area

Well established rural practice. Computerized, progressive office in growing community. Excellent health and recreational facilities. Reply to **CDA ACCESS Box # 2665.** (04/13)

SASKATCHEWAN
Practice for Sale or Locum Required
Moderate income practice for sale, all new equipment. Progressive surroundings. Please reply to **CDA ACCESS Box # 2645.** (11/13)

ONTARIO - Northwestern Region: Busy dental practice for sale. Three operatories with fully modern equipment, low overhead, 90% insurance, grossing over \$500,000. Excellent staff with full-time hygienist and strong recall base. Practice would be able to support associate also. Ideal for the outdoor enthusiast (boating, hiking, fishing). Please reply to CDA ACCESS Box # 2670. (04/06)

ONTARIO - Kitchener/Waterloo: Practice for sale. Owner returning to school, three-year-old patient base in new (Oct. 94) location. March gross \$29,500, no assignment. Attractive

stand alone building, highly visible sign, on King Street (main artery), one block from KW Hospital, paved rear parking. Bright 1,000 sq. ft. ground floor, one op., 2nd op. ready, new top equipment/instruments (Siemens OP pan/MD X-ray, Kavo chair/hps, Statim, Dentx autodvlp, two term-Abel, Safeguard full charts). Great lease with health prof. landlord, options to increase sp/purchase building. Fastest growing economy/lowest unemployment/safe friendly place to live. Call Richard (519) 888-7869 or (519) 579-1899.

(05/06)

EXCELLENT INVESTMENT OPPORTUNITY

For sale - Medical-Dental Building
Two Storey, Fully Leased
Prime location - Yonge-Eglinton
Toronto \$595,000
Call (416) 203-3232. (05/06)

QUEBEC - Montreal: For sale/rent or percentage sharing. Dental practice - turnkey operation. All negotiable. Prestigious area - Montreal, Cote Des Neiges at Montpetit in Caisse Populaire building, metro access. Please call (514) 342-1742. (06/06)

NOVA SCOTIA - Halifax: Bedroom community. Exceptional family practice opportunity, 30 minutes from metro Halifax. High gross, low overhead. Owner willing to assist in transition. Well equipped, comfortable office, includes Pan. Please call (902) 835-3959 or reply to CDA ACCESS Box # 2672. (05/07)

NOVA SCOTIA - Springhill: For sale - well established family practice. Two newly equipped operatories plus hygiene and pan, located in modern cost-sharing clinic. Good gross; existing overhead 50%. Supportive staff; stable economy. Close to ocean beaches, downhill and cross-country skiing, and outdoor recreation. Central Maritimes. Contact Bill Tingley at (902) 835-1103 or within Maritimes 1-800-565-1502. (04/06)

NEWFOUNDLAND - Ferryland: For sale general family practice one hour drive from St. Johns. Two fully equipped operatories with a satellite clinic. Low overhead, solid patient base. Well priced for quick sale, call (709) 432-2771 or (709) 438-2270.

(06/08)

NEWFOUNDLAND Scenic West Coast Practice for sale.

Preventive-oriented family practice - high gross, low overhead. Great location - close to downtown. Great outdoor activities, close to skiing, golf course. Please reply to
CDA ACCESS Box # 2636. (06/06)

Professional Services

To place your
CDA ACCESS AD
Call
Neil McGillivray
at
(800) 661-5004
in Toronto call
(905) 278-6700

INTERIOR CO-ORDINATED GROUP

DESIGN-DEVELOPERS-FACILITATORS
PROFESSIONAL CONSULTANTS SINCE 1973

- * PREMISE LOCATIONS
- * LEASE NEGOTIATIONS
- * PRELIMINARY PLANS
- * WORKING DRAWINGS
- * BUDGET ESTIMATING
- * PROJECT MANAGEMENT
- * WHOLESALE PURCHASING
- * PURCHASE OR SELL PRACTICE

We at **INTERIOR CO-ORDINATED GROUP** specialize in premise and lease negotiations, design, renovations, construction, and assistance with the **Purchasing** and **Sales** of dental facilities in B.C., Alberta and the U.S.A. Review your plans with our associates before you discuss with real estate agents.

(SAVE THOUSANDS OF DOLLARS AND ELIMINATE
COSTLY ERRORS AND UNNECESSARY MISTAKES.)

... NO OBLIGATION AND WE GUARANTEE OUR COMMITMENT 100% ...
THANK YOU ...WAYNE H. HARTLEY ... C.E.O. ...

CONFIDENTIAL CONSULTATION BY APPOINTMENT ONLY.

5741-A 176th Street
Surrey, B.C. V3S 4C9

Office (604) 576-1100
Pager (604) 645-0853

DENTAL UPHOLSTERY SPECIALIST

Recover your dental and side chairs on the weekend or on your vacation.

Call Jerry for information at
"RED ROOSTER DESIGNS"
(519) 666-1635

GUARANTEED WORKMANSHIP (05/10)

Positions Available/Sought

YUKON - Whitehorse: Associate required for Klondyke Dental Clinic. If you enjoy modern city amenities and the great outdoors you are welcome to join us as a general dentist associate, or in the capacity of a children's dentist. Contact Dr. Pearson at (403) 668-4618. (02/06)

BRITISH COLUMBIA - Williams Lake: Associate wanted. Proven performer. Enthusiastic associate can easily earn a six figure income in my large family practice. Well organized, computerized office with three full time hygienists, office manager and visiting oral surgeon, anesthesiologist and periodontist. Excellent 15 year earning track record for previous associates. Please call Alistar Menzies COLLECT in Williams Lake, B.C. Office (604) 398-7161, home (604) 392-2615, fax (604) 398-8633. This is a place to get both good experience and a good income. (05/13)

BRITISH COLUMBIA - Victoria:

Associate wanted with view toward a future partnership for a pedodontist. Must be a caring, hard-working individual. Position available after December 1995. Your future has unlimited potential with a great lifestyle and the best climate in all of Canada. Please call (604) 744-1065 after 6 p.m. (02/06)

BRITISH COLUMBIA - Prince George:

Associate wanted. Looking for a motivated conscientious associate to work with owner in a large, very modern practice located in a rapidly growing university community in north central B.C. Excellent opportunity to increase a new graduate's clinical and practice management skills. For information call (604) 964-6700. (10/13)

BRITISH COLUMBIA - Vancouver Area:

A progressive fully computerized office in the beautiful Vancouver area is presently looking for an experienced dentist to work with our friendly, competent team. If you are interested in a long-term commitment with a future partnership agreement please call our office at (604) 931-7491. (05/07)

**CAMPBELL RIVER - B.C.
Associate Wanted**

Our exceptionally productive practice is located in an area of rapid growth on Vancouver Island.

If you are a young dentist committed to quality patient care and also love to climb, hike, ski, fish, fly, drive, kayak... this practice may interest you.

An opportunity to do much more than just amalgams exists. Team of doctors, three hygienists, treatment consultant and auxiliary staff provide patient-centered, full-service, progressive dentistry. We are fully computerized and have an intra-oral camera.

Option to buy-in for the right person.

Please call

(604) 286-6040 - business hours
(604) 287-7654 - evenings/weekends.

(06/07)

ALBERTA - CALGARY**Wanted for August 1, 1995**

associate for growing practice, bustling and prosperous community. Two to three years work experience an asset.

Please contact Kelly or Lorna at

(403) 254-1300. (06/07)

The University of British Columbia**Department of Oral Biology
RESEARCH ASSOCIATE**

The Department of Oral Biology requires a Research Associate in Craniofacial Biology with specific knowledge of musculoskeletal structure, growth, and function in the mammalian masticatory system.

The applicant must have practical research experience at the Ph. D. level in the anatomical and physiological interactions that occur in the muscles, articulation and dentition of the jaws, and have a formal background in musculoskeletal biomechanics. Familiarization with three-dimensional dynamic modelling techniques is essential, including experience in the use of analytical software such as ADAMS. Experience with the Finite Element method would be useful. The successful applicant will be expected to continue projects already under way, develop new areas of research, guide graduate students, and participate in the general duties of the research group.

The laboratory has extensive facilities for recording behaviour in the human masticatory system. It uses Silicon Graphics Indigo Extreme and Indy work stations, and is linked via ATM technology to local biomedical imaging facilities, and the Media and Graphics Interdisciplinary Centre of the University. Applications must be received by July 31, 1995.

In accordance with Canadian immigration requirements this advertisement is directed to Canadian citizens and permanent residents of Canada. The University of British Columbia welcomes all applicants, especially women, aboriginal people, visible minorities and persons with disabilities.

Applicants should send a curriculum vitae, a summary of research interests and the names and addresses of three references to:

Dr. D.M. Brunette

Department of Oral Biology, Faculty of Dentistry

The University of British Columbia

2199 Wesbrook Mall, Vancouver, B.C. V6T 1Z3

ALBERTA - Calgary: Associate wanted to share dental space and expenses. Modern group practice, central location, preventive-oriented emergency service, extended hours. Requires two dentists to purchase part of dental clinic and share expenses. Send C.V. to CDA ACCESS Box # 2663. (03/06)

ALBERTA - Calgary: Dentist/specialist to share space part time or full time in modern computerized office. Prime downtown retail location, high pedestrian walk-by traffic. Owner working four days a week. Six operatories, gross 500K a year. Call office (403) 265-2929, home (403) 686-2921. (04/06)

ALBERTA - Calgary: Calgary practitioner retiring. Seeking buyer willing to associate part time and perform transition in three to six months. Two years on lease with option. Computerized. Recently refurbished. Viable low stress practice. Please reply to CDA ACCESS Box # 2674 for information. (06/13)

SASKATCHEWAN - Regina: Motivated progressive individual

required for Dentrix computerized seven-operator practice in mall location. The successful candidate will provide quality full range services and be willing to work extended hours. Associateship progression to equity position possible for the right individual. Contact Dr. Francois Bourassa or Dr. Loreen Larson at (306) 789-2330 or write to: 332 University Park Drive, Regina, Saskatchewan S4V 0Y8. (05/07)

MANITOBA - Flin Flon: Associate wanted. Hawaii, Mexico, cruising in the Caribbean. A two week paid vacation is part of the benefit and experience that you will receive while working and enjoying life in a friendly general family practice, in a small community. Full clinical freedom. You may choose to stay forever or return to the South after a year or more with a padded account, having practised where you were really needed — a good feeling. For further details please phone: Dr. Malcolm T. Crozier, office (204) 687-4214, home (204) 687-5580, fax (204) 687-4833.

(05/06)

UM The University of Manitoba

Applications are invited for the Advanced Periodontics Program, Faculty of Dentistry, University of Manitoba. This comprehensive program, leading to a Diploma in Periodontics, will be a minimum of 30 months duration. The deadline for submitting applications is September 1, 1995, for eligibility to begin the program in August, 1996.

Address inquiries to

Dr. David Singer,

**Head, Department of Dental
Diagnostic and Surgical Sciences,
Faculty of Dentistry,
University of Manitoba,
D343A-780 Bannatyne Avenue,
Winnipeg, Manitoba,
Canada R3E 0W2.** (06/06)

MANITOBA - Winnipeg: Full-time associate desired for a well established dental practice in West Kildonan, Winnipeg. Call (204) 334-1768. (04/06)

ONTARIO - London: Associate wanted. Are you looking for a challenging career opportunity in a highly progressive, busy dental office? We are looking for a dentist with a mature attitude, pleasing personality and the ability to handle people effectively. The successful applicant must be able to communicate well with patients and team members, energetic personality is a must in order to fit into our dynamic group practice. This position includes evenings and weekends. All resumes held in confidence. Please forward resumes to CDA ACCESS Box # 2675. (06/07)

ONTARIO - Thunder Bay: Full-time associate wanted to start immediately in a combined general dentistry and anesthesia practice. All new equipment (under five years), with three to four ops, modern office. Skiing, fishing, hunting, camping, hiking etc. all within minutes of town. Please call (807) 683-5222 ask for Doug or Sue. (03/06)

ONTARIO - Southwest Region:
Multi-Specialist Group Practice.
New Facility Opening Fall 1995.
Requires periodontist and endodontist.

Part-time or full-time.
Partnership possibility.

**Please contact M. Riley
(519) 623-6858 for details.** (05/06)

ONTARIO - Sudbury: Associate wanted, full-time, for a busy, modern, well established practice. Potential for future partnership. Call (705) 523-5500. (05/07)

ONTARIO - Sudbury: Seeking an experienced associate for my busy family practice. Expanded office hours will include evenings and Saturdays. For more information please contact Russell Knight c/o EXPEDIENT CONSULTANTS (905) 415-9767. (02/13)

ONTARIO - Hamilton: Associate wanted. We are seeking an experienced, enthusiastic dentist interested in a long-term commitment in our practice (possibility of eventual buy-in). Practice is multi-disciplinary, preventive-oriented, very well organized by an excellent staff. Please reply to CDA ACCESS Box # 2673. (05/07)

DENTAL HYGIENIST

Experienced, motivated, currently working part-time, seeking full-time position only. Willing to relocate. Please feel free to call Mary at (705) 897-6086. (05/07)

**UNIVERSITY OF WESTERN ONTARIO
RESTORATIVE DENTISTRY**

Tenure-track position for Assistant Professor available in Restorative Dentistry, September 1995 or as soon thereafter as possible. DDS or equivalent degree and specialty training in one of the restorative disciplines required. Applicants should have clinical teaching experience and research record.

Duties include didactic and clinical teaching and research.

Inquires and applications, which should include curriculum vitae and names of three referees to:

Dr. Ralph I. Brooke

Dean, Faculty of Dentistry

**The University of Western Ontario
London, Ontario N6A 5C1**

Applications accepted until position filled.

Positions are subject to budget approval. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada. The University of Western Ontario is committed to employment equity, welcomes diversity in the workplace, and encourages applications from all qualified individuals including women, members of visible minorities, aboriginal persons, and persons with disabilities. (06/06)

ONTARIO - WINDSOR

Wanted motivated conscientious associate to work with owner in a modern general practice.

(New facilities, flexible hours).

Bilingualism, family oriented and experience all beneficial. Progressive philosophy, superior staff, excellent growth potential. **Reply to**

CDA ACCESS Box # 2668. (04/13)

**ONTARIO - WINDSOR
Oral Surgeon**

Established oral and maxillofacial surgery practice seeking board eligible/certified oral surgeon for associateship leading to partnership.

**Reply to Dr. Bernard Lyons
1368 Ouellette Ave.**

Windsor, Ontario N8X 1J9. (04/06)

ONTARIO - Northwestern Region: Full-time associate needed for extremely busy general dental practice. Dentists and hygienists fully booked eight months in advance. High gross, high net, excellent staff and working conditions. Practice on American border in Northwestern Ontario. Please call (807) 274-5365, (807) 274-5549 evenings and weekends, or write to 1201 Colonization Road West, Fort Frances, Ontario P9A 2T6. (04/06)

ONTARIO - Kitchener/Waterloo: Associateship available. Full time five-day week associateship, option to purchase. Established patient base moved to new location October 1994. Excellent associate billing history \$33,201 April 1995. Trained enthusiastic staff. Attractive stand-alone building, highly visible sign, on King Street (main artery), one block from K-W Hospital, paved rear parking. Bright 1,000 sq. ft. ground floor, one op., 2nd op. ready. Brand new top equipment/instruments (Siemens OP pan/MD X-Ray, KAVO chair/hps, Statim, Dentx autodvlp, two term-Abel, Safeguard full charts, Macan electosurg). K-W fastest growing economy/lowest unemployment in Ontario. Safe, friendly place to live. Call Richard at (519) 888-7869/579-1899. (06/06)

QUEBEC/ONTARIO: Experienced dentist in all disciplines available for locum, part-time or full-time. 30 years experience including 15 years University/hospital teaching. Trilingual, neat, clean, fast worker,

warm congenial personality, excellent businessman. Seeks position in Montreal or Hull, Quebec, or Ottawa or Toronto, Ontario. Call (514) 342-1742. (06/06)

TWO GREAT DENTAL POSITIONS AVAILABLE IN GREAT BRITAIN

Southampton

Orthodontist and general dental practitioner required for a busy practice treating both national health service and private patients.

Contact: Louis Thiel, On UK
011-44-1-705-551-1379 (home) . (06/08)

Miscellaneous

TREK BAVARIA

15 days of HIKE, BIKE, RAFT and sightSEE in BERCHTESGADEN

Sept. 9-23 1995 - CN \$2950

Discovery Canada:

Outdoor Adventure Inc.

Box 451, Kaslo, B.C. V0G 1M0

Tel: (604) 353-7349,

Fax: (604) 353-7559 (05/06)

FOR SALE IN EASTERN ONTARIO

Charming century home on three treed acres in the Village of Elgin, 1/2 hour from Kingston, Brockville, Smiths Falls — four bedrooms, two baths, office.

Retired dentist's estate - \$165M.

(613) 832-1999. (05/06)

Meetings & Announcements

RCDCA

ATTENTION ALL RCDC/CFDS PERSONNEL

Our 80th Anniversary

MEET and GREET

will be held

Monday August 28 at 5 p.m.

CHATEAU LAURIER HOTEL

MacDonald Room

during the CDA ANNUAL MEETING

come to MEET and GREET

your OLD FRIENDS and NEW

for further information please contact

Captain W.S. MacKenzie

(416) 488-9735 or FAX (416) 932-1994

(06/06)

OFFICE MANAGEMENT LEADERSHIP WORKSHOP

One Of A Kind In Canada for Dentists & Their Business Team
By ANITA JUPP

"Get What You Expect From Your Practice"

Production - Increase Your Net

Organization - Systems

Laughter - Work Smarter Not Harder

Improvement - Set Practice Goals

Success - Keep Ahead Of The Changes In Dentistry

Harmony - The Team Concept

Three Day Workshops in Toronto

August & December 1995

Limited Attendance - Registration \$795 per person

For More Information on Anita's

☺ Caribbean Cruise - March 1996

☺ Personal Practice Analysis

☺ Practice Building Products

☺ Ski Seminar - Whistler, B.C. - March 1996

☺ Dental Reception Workshops

Call (905) 336-3662

Fax: (905) 336-3712

LINDA MILES SEMINARS FOR '95

Practice

Management

That Works

NEW ORLEANS, LOUISIANA

July 14-15, 1995

MINNEAPOLIS, MINNESOTA

July 20, 1995

COLUMBUS, OHIO

July 21, 1995

CHICAGO, ILLINOIS

July 26, 1995

MYRTLE BEACH, SOUTH CAROLINA

August 4-5, 1995

VIRGINIA BEACH, VIRGINIA

August 10-11, 1995

ATLANTA, GEORGIA

August 16, 1995

NEW YORK, NEW YORK

August 18, 1995

TOLEDO, OHIO

October 12, 1995

CLEVELAND, OHIO

October 13, 1995

Call collect EST:

1.804.498.0014

Fax:

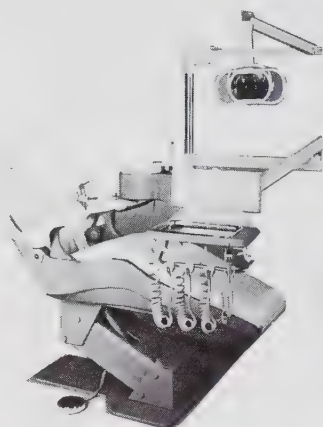
1.804.498.0290

MILES & ASSOCIATES
484 VIKING DRIVE
SUITE 190
VIRGINIA BEACH, VA
23452

AGD APPROVED
NATIONAL SPONSOR
FAGD/MAGD CREDIT
DECEMBER 1, 1988 TO
DECEMBER 31, 1995

DANSEREAU HEALTH PRODUCTS

\$3995.00 (U.S.) COMPLETE OPERATORY



CALIFORNIA DENTAL CHAIR

With Adjustable Headrest
Automatic Return
5 Year Warranty
30 color choices

CALIFORNIA DELIVERY SYSTEM

3 Handpiece Automatic
Cuspidor with Cup Filler
and Assistants Package
includes an E-Z install Junction Box

CALIFORNIA DENTAL LIGHT

Chair Mounted Light
High and Low Settings

10-14 DAY DELIVERY
ON ALL EQUIPMENT

Proudly Made in the
U.S.A. for 32 Years

Dansereau Health Products Inc.
559 S. Rose St.
Anaheim, Ca. 92805
Ph# (800) 423-5657 U.S.A. and
Canada
Fax# (714) 776-4652

COMPLETE NEW DENTAL OFFICES AVAILABLE FOR \$418.86 (U.S.) PER MONTH.

SASKATCHEWAN: Attention oral surgeons and orthodontists. I need your Axial-Tome 60. Call immediately (306) 463-4488 or fax (306) 463-4488. (12/06)



YOUR 'DEAD' INVENTORY CAN BRING LIFE TO HUNGRY CHILDREN

Do you have product sitting in storage somewhere? Stuff that you know you aren't going to use or sell? Just taking up space and costing you money?

If it's not going to be used anyway, why not get rid of it and at the same time bring help and hope to hungry children in Canada and throughout the world?

Through a unique program of Canadian Feed the Children (registered charity #0734434-09) corporations can donate surplus inventory to a charity. Canadian Feed the Children has a world wide network of potential buyers and donated or discounted shipping. With your permission the product can be sold in places like the former USSR countries, Eastern Europe or Latin America. All of the funds received will be used to support programs for children in Canada and overseas.

So everybody benefits. As well as getting a tax credit, you get rid of stuff you don't really want. Your company and employees feel good about helping a very worthy cause. And hungry kids get fed and cared for.

So call us. Usually we can come within a few days and pick up your product or you can drop it off at our warehouse in Toronto.

Great idea, eh?

Call today: 1-800-387-1221 in Toronto 416 757-1220



Canadian Feed the Children Inc., 174 Bartley Drive,
Toronto, Ontario, M4A 1E1

ADVERTISERS' INDEX

American Dental Assoc.	491
Ash Temple	IFC
Bisco Dental	IBC
Block Drug	479
CDA Leasing	486
CDAnet Plus	517
CDA New Directions Seminars	533, 534, 535, 536
CDA RSP	481
CDA Taking Care of Business	493, 494
Canadian Centre for Continuing Dental Education	478
CDSPI	470
DCF	518
Experdent	514
Fortune Practice Management	485
Hoechst-Roussel	468
Kennedy Professional	509
Maxim Computers	482
Premier Dental	464, 525
Scotia Bank	510
Vancouver Seminar for Dentistry	540
Warner Lambert	OBC, 476

« The 5th Generation of Adhesive Bonding »

THE DAWN OF A NEW ERA!



Introducing ONE-STEP™ – The All-In-One Primer/Resin Adhesive

From the
company that

brought you the 4th generation of adhesive
bonding comes the dawn of a new era.

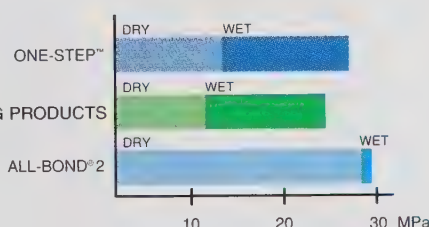
ONE-STEP™ – the first 5th generation universal
bonding adhesive designed to make *direct and
indirect* bonding easier than ever!

ONE-STEP combines *Primer and Bonding
Resin in a single bottle for true one-step
bonding*. There's no mixing—just apply 2-3 coats
of ONE-STEP and *light-cure once*, it's that
simple. Of course, ONE-STEP provides the
outstanding bond strengths to dentin (27-29
MPa), enamel (30-32 MPa), composites,
metals, treated porcelain and fresh amalgam
as well as the resistance to microleakage that
you've come to expect from Bisco, the leader
in adhesive bonding.

Exceptional Bonding Versatility

ONE-STEP is ideal for direct
and multiple surface procedures.
In addition, because of its
exceptionally low film thickness
(10-20 µm) it is especially
effective for indirect
procedures as well!

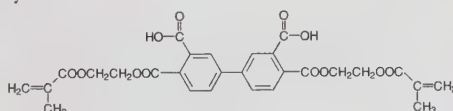
- All Classes of Direct Restorations
- Crown & Bridge
- Core Build-Up
- Inlay/Onlay
- Bonded Amalgam



ONE-STEP exhibits outstanding bond strength

Patented Chemistry For Better Bonds

ONE-STEP uses the same proprietary
chemical compound* found in ALL-BOND® 2.
This molecular structure—BPDM—features
a *biphenyl ring structure* to provide more
Freedom of Rotation for higher monomer
conversion rates. As a result, you get consistent,
complete curing reactions that help prevent
sensitivity and microleakage¹ whenever
you use ONE-STEP.

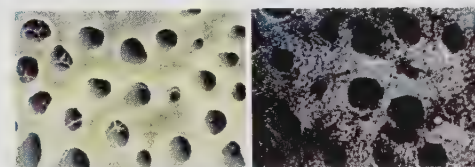


True "Moist Bonding"† For Application Ease

By virtue of the hydrophilic (water chasing)
properties of the primer in ONE-STEP, you can
perform bonding procedures in the tooth's
natural, moist state. This lets you apply
ONE-STEP with incredible application versatility.

Antimicrobial Semi-Gel Etchants For A Cleaner Bonding Surface

Our patented semi-gel etchants[‡], available in
your choice of 10%, 32% and 37% phosphoric
acid concentrations, feature a proprietary
polymer thickener (instead of silica) to make
handling easier and assure a residue-free
surface for optimal bond strength². We've also
incorporated Benzalkonium Chloride for
significant antimicrobial action³ with a residual



Dentin etched with
Bisco Semi-Gel

Dentin etched with
typical gel

"zone of inhibition" of up to 7mm to help
reduce bacteria, one of the primary causes of
post-operative sensitivity⁴.

Bond With Confidence

ONE-STEP comes from the makers of
ALL-BOND® 2—you can feel confident using
it with your patients. So, if you want to take



your technique into
the next era, give us a
call. And close the
generation gap with
ONE-STEP!



TO ORDER
ONE-STEP™
UNIVERSAL ADHESIVE SYSTEM

Call; For Western & Quebec Provinces
BISCO DENTAL CANADA
1-800-667-8811

Call; For Ontario & Maritime Provinces
CLINICAL RESEARCH DENTAL
1-800-265-3444

References:

1. Crim, Gary. "Microleakage Evaluation of Bisco One-Step". University of Louisville School of Dentistry, 1995
2. Kanca, J.J. "Etchant Composition and Bond Strength to Dentin". Am J Dent 1993;6:162-164.
3. Chan, Daniel. "Residual Effect of 1% and 2% Benzalkonium Chloride Incorporated in an Etchant on the Susceptibility of Actinomyces Viscosus T14V". IADR Abstract 995
4. Brannstrom, M., Johansson, H. "Cavity Treatment with a Microbicidal Fluoride Solution: Growth of Bacteria and Effect on the Pulp". J. Prosthet. Dent., Vol. 30, pg. 305, Sept 1973

* US Patent #5,448,988 † US Patent #5,385,728 ‡ Moist does not mean saliva or blood contaminated
© 1995 Bisco, Inc.

CDA — CRD Booth #514, 515, 518
CDA — BISCO Booth #415

LISTERINE*

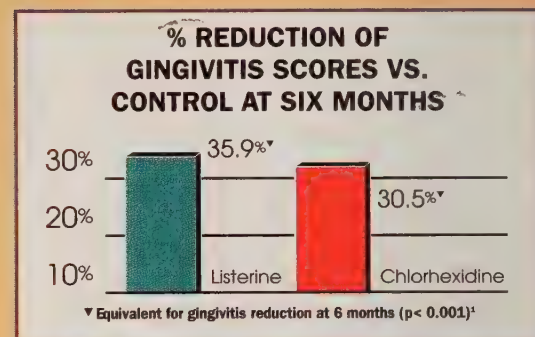
FIGHTS GINGIVITIS

AS EFFECTIVELY

AS CHLORHEXIDINE.



A recent clinical study¹ concluded that Listerine inhibited the development of gingivitis[†] as effectively as 0.12% chlorhexidine. In fact, Listerine reduced the development of gingivitis by almost 36% over brushing and flossing alone¹.



Unlike chlorhexidine, Listerine works without causing side effects like extrinsic tooth stain¹. Listerine is the only oral rinse, prescription or nonprescription, to receive

the Canadian Dental



Association's seal of recognition for efficacy in the reduction of plaque and gingivitis².

Twice daily rinsing with Listerine works synergistically with brushing, flossing and your professional care¹. If you'd like to find out more about Listerine call 1-800-683-1650. We'll give you all the facts.



**LISTERINE FIGHTS GINGIVITIS
WITHOUT STAINING**

[†] "Listerine helps reduce gingivitis (minor inflammation of the gums caused by plaque above the gumline) when used in a conscientiously applied program of oral hygiene and dental care." CANADIAN DENTAL ASSOCIATION [†] Gingivitis was evaluated using the Modified Gingival Index. Listerine: Do not swallow. Not to be used by children under 12 years of age. Keep out of reach of children.

*TM Warner-Lambert Company/Warner Wellcome Inc. use Scarborough, Ontario M1L 2N3.

1. Overholser CD et al. Comparative effects of two chemotherapeutic mouthrinses on the development of supragingival dental plaque and gingivitis. *J Clin Periodontol* 1990;17:575-579.
2. Data on file, 1995.

7 DAYS

THIS BOOK MAY BE KEPT FOR
7 DAYS ONLY

IT CANNOT BE RENEWED

AUG 16 1996

SEP 25 1996

OCT 2 - 1996

NOV 7 1996

DEC 3 1996

FEB 17 1997

DEC 18 1997

MAY 29 1998

JUN " 2 1998

MAY 3 - 1999

APR 2 2002

FEB 21 2006

APR - 5 2006

RK
1
C37
v.

CANADIAN DENTAL
ASSOCIATION JOURNAL
61/1-6
1995

